ZyWALL (ZLD)

CLI Reference Guide

Version 2.00
7/2007
Edition 1

DEFAULT LOGIN	
LAN Port	**1**
IP Address	**http://192.168.1.1**
User Name	**admin**
Password	**1234**

ZyXEL

www.zyxel.com

About This User's Guide

This manual is designed to guide you through the configuration of your ZLD-based ZyWALL for its various applications using the CLI (Command Line Interface). Generally, it is organized by feature as outlined in the web configurator.

See the web configurator User's Guide for related information on all features.

Intended Audience

This manual is intended for network administrators, or people who have a good knowledge of TCP/IP networking concepts and topology, who want to want to configure the ZyWALL using the CLI.

1. Read Chapter 1 on page 13 for how to access and use the CLI (Command Line Interface).
2. Read Chapter 2 on page 29 to learn about the CLI user and privilege modes.
3. Subsequent chapters are arranged by menu item as defined in the web configurator. Read each chapter carefully for detailed information on that menu item.

Related Documentation

- Supporting Disk
  Refer to the included CD for support documents.
- Quick Start Guide
  The Quick Start Guide is designed to help you get up and running right away. It contains a detailed easy-to-follow connection diagram, default settings, handy checklists and information on setting up your network and configuring for Internet access.
- Configuration Reference Card
  See this handy reference card to see what prerequisites are needed to configure a feature and how to use this feature in the ZyWALL.
- User's Guide
  The User's Guide explains how to use the web configurator to configure the ZyWALL.

Some features cannot be configured in both the web configurator and CLI.

- Web Configurator Online Help
  Embedded web help for descriptions of individual screens and supplementary information.
- ZyXEL Web Site

Please go to http://www.zyxel.com for product news, firmware, updated documents, and other support materials.

User Guide Feedback

Help us help you. Send all User Guide-related comments, questions or suggestions for improvement to the following address, or use e-mail instead. Thank you!

The Technical Writing Team,
ZyXEL Communications Corp.,
6 Innovation Road II,
Science-Based Industrial Park,
Hsinchu, 300, Taiwan.

E-mail: techwriters@zyxel.com.tw

Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this User's Guide.

Warnings tell you about things that could harm you or your device.

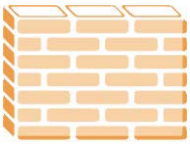
Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions

- The ZLD-based ZyWALL may be referred to as the "ZyWALL", the "device", the "system" or the "product" in this User's Guide.
- Product labels, screen names, field labels and field choices are all in **bold** font.
- A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard.
- "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices.
- A right angle bracket (>) within a screen name denotes a mouse click. For example, **Maintenance > Log > Log Setting** means you first click **Maintenance** in the navigation panel, then the **Log** sub menu and finally the **Log Setting** tab to get to that screen.
- Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on.
- "e.g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words".

Icons Used in Figures

Figures in this User's Guide may use the following generic icons. The ZyWALL icon is not an exact representation of your device.

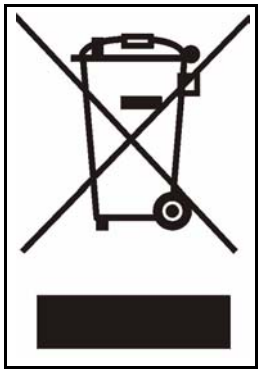
ZyWALL	Computer	Notebook computer
Server	Firewall 	Telephone
Switch	Router	

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions.

- Do NOT use this product near water, for example, in a wet basement or near a swimming pool.
- Do NOT expose your device to dampness, dust or corrosive liquids.
- Do NOT store things on the device.
- Do NOT install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Use ONLY an appropriate power adaptor or cord for your device. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe).
- Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution.
- If the power adaptor or cord is damaged, remove it from the device and the power source.
- Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: RISK OF EXPLOSION IF BATTERY (on the motherboard) IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. Dispose them at the applicable collection point for the recycling of electrical and electronic equipment. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device.

This product is recyclable. Dispose of it properly.



Contents Overview

Introduction 11

Command Line Interface 13
User and Privilege Modes 29
Status 33
Registration 37

Network 45

Interfaces 47
Trunks 65
Route 69
Routing Protocol 75
Zones 79
DDNS 83
Virtual Servers 85
HTTP Redirect 87
ALG 89

Firewall and VPN 91

Firewall 93
IPSec VPN 99
SSL VPN 107
L2TP VPN 111

Application Patrol & Anti-X 119

Application Patrol 121
Anti-Virus 129
IDP Commands 137
Content Filtering 155

Device HA & Objects 165

Device HA 167
User/Group 171
Addresses 177
Services 181
Schedules 185
AAA Server 187
Authentication Objects 193

Certificates 195
ISP Accounts 201
SSL Application 203

System 205

System 207
System Remote Management 211

Maintenance and Index 225

File Manager 227
Logs 245
Reports and Reboot 251
Session Timeout 253
Diagnostics 255
Maintenance Tools 257
Watchdog Timer 261

PART I
Introduction

Command Line Interface (13)
User and Privilege Modes (29)
Registration (37)

1

Command Line Interface

This chapter describes how to access and use the CLI (Command Line Interface).

1.1 Overview

If you have problems with your ZyWALL, customer support may request that you issue some of these commands to assist them in troubleshooting.

Use of undocumented commands or misconfiguration can damage the ZyWALL and possibly render it unusable.

1.1.1 The Configuration File

When you configure the ZyWALL using either the CLI (Command Line Interface) or the web configurator, the settings are saved as a series of commands in a configuration file on the ZyWALL. You can store more than one configuration file on the ZyWALL. However, only one configuration file is used at a time.

You can perform the following with a configuration file:

- Back up ZyWALL configuration once the ZyWALL is set up to work in your network.
- Restore ZyWALL configuration.
- Save and edit a configuration file and upload it to multiple ZyWALLs (of the same model) in your network to have the same settings.

You may also edit a configuration file using a text editor.

1.2 Accessing the CLI

You can access the CLI using a terminal emulation program on a computer connected to the console port, from the web configurator or access the ZyWALL using Telnet or SSH (Secure SHell).

The ZyWALL might force you to log out of your session if reauthentication time, lease time, or idle timeout is reached. See Chapter 23 on page 171 for more information about these settings.

1.2.1 Console Port

The default settings for the console port are as follows.

Table 1 Managing the ZyWALL: Console Port

SETTING	VALUE
Speed	115200 bps
Data Bits	8
Parity	None
Stop Bit	1
Flow Control	Off

When you turn on your ZyWALL, it performs several internal tests as well as line initialization. You can view the initialization information using the console port.

- Garbled text displays if your terminal emulation program's speed is set lower than the ZyWALL's.
- No text displays if the speed is set higher than the ZyWALL's.
- If changing your terminal emulation program's speed does not get anything to display, restart the ZyWALL.
- If restarting the ZyWALL does not get anything to display, contact your local customer support.

Figure 1 Console Port Power-on Display

```
Main Processor : Intel Pentium(R) 4 2.80GHz(133x21.0)
Memory Testing :  346432K OK









Press DEL to enter SETUP60, ESC to skip memory test
```

After the initialization, the login screen displays.

Figure 2 Login Screen

```
Welcome to ZyWALL 1050

Username:
```

Enter the user name and password at the prompts.

The default login username is **admin** and password is **1234**. The username and password are case-sensitive.

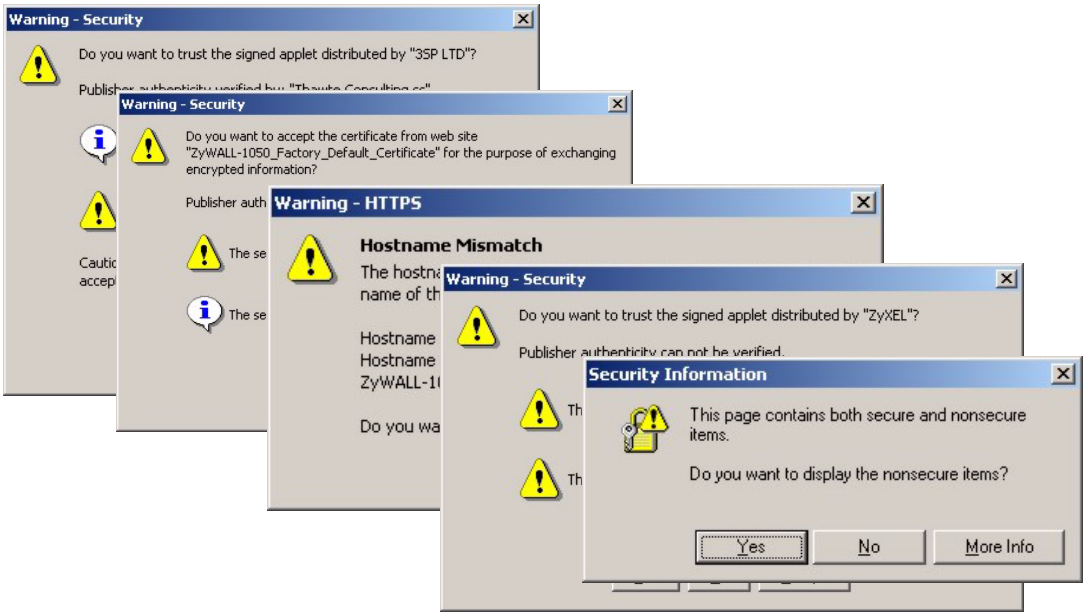
1.2.2 Web Configurator Console

Before you can access the CLI through the web configurator, make sure your computer supports the Java Runtime Environment. You will be prompted to download and install the Java plug-in if it is not already installed.

When you access the CLI using the web console, your computer establishes a SSH (Secure SHell) connection to the ZyWALL. Follow the steps below to access the web console.

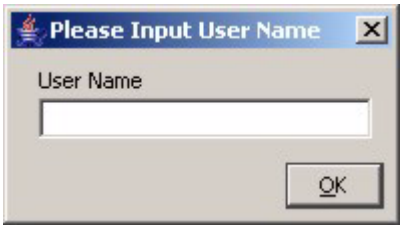
1. Log into the web configurator.
2. Click the **Console** icon in the top-right corner of the web configurator screen.
3. If the Java plug-in is already installed, skip to step 4.
   Otherwise, you will be prompted to install the Java plug-in. If the prompt does not display and the screen remains gray, you have to download the setup program.
4. The web console starts. This might take a few seconds. One or more security screens may display. Click **Yes** or **Always**.

Figure 3 Web Console: Security Warnings


Warning - Security
Do you want to trust the signed applet distributed by "3SP LTD"?
Warning - Security
Do you want to accept the certificate from web site "ZyWALL-1050_Factory_Default_Certificate" for the purpose of exchanging encrypted information?
Warning - HTTPS
Hostname Mismatch
Warning - Security
Do you want to trust the signed applet distributed by "ZyXEL"?
Security Information
This page contains both secure and nonsecure items.
Do you want to display the nonsecure items?
Yes
No
More Info

Finally, the **User Name** screen appears.

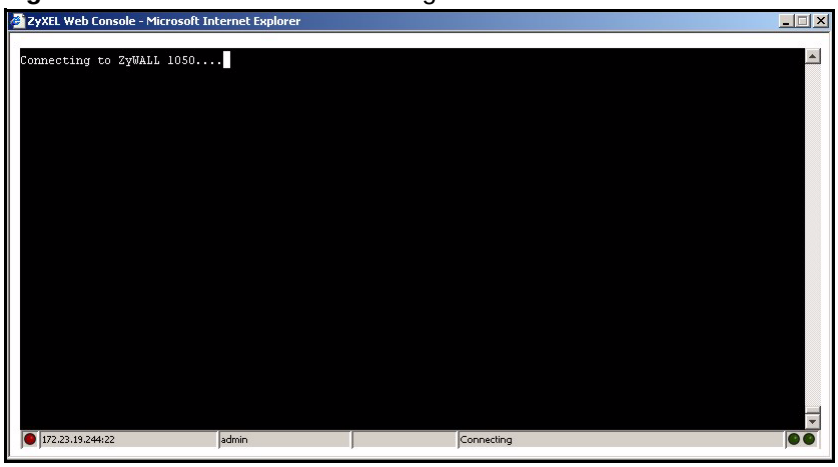
Figure 4 Web Console: User Name



5 Enter the user name you want to use to log in to the console. The console begins to connect to the ZyWALL.

The default login username is **admin**. It is case-sensitive.

Figure 5 Web Console: Connecting

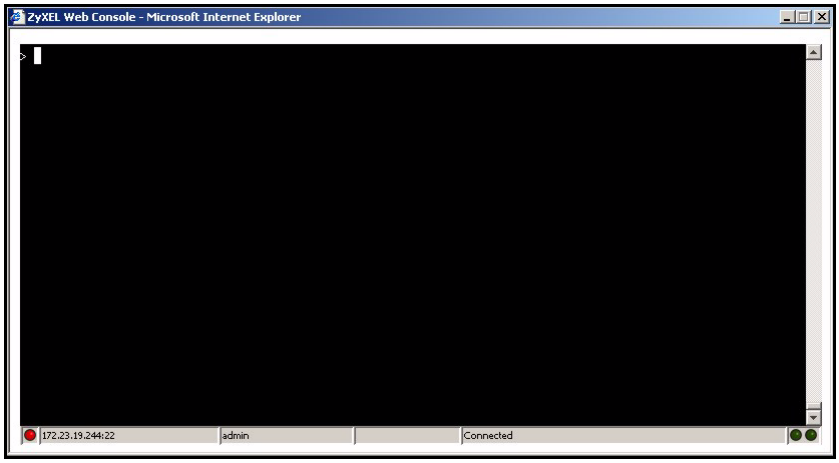


Then, the **Password** screen appears.

Figure 6 Web Console: Password

6 Enter the password for the user name you specified earlier, and click **OK**. If you enter the password incorrectly, you get an error message, and you may have to close the console window and open it again. If you enter the password correctly, the console screen appears.

Figure 7 Web Console



7 To use most commands in this User's Guide, enter `configure terminal`. The prompt should change to `Router(config)#`.

1.2.3 Telnet

Use the following steps to Telnet into your ZyWALL.

1. If your computer is connected to the ZyWALL over the Internet, skip to the next step. Make sure your computer IP address and the ZyWALL IP address are on the same subnet.
2. In Windows, click **Start** (usually in the bottom left corner) and **Run**. Then type `telnet` and the ZyWALL's IP address. For example, enter `telnet 192.168.1.1` (the default management IP address).
3. Click **OK**. A login screen displays. Enter the user name and password at the prompts.

The default login username is **admin** and password is **1234**. The username and password are case-sensitive.

1.2.4 SSH (Secure SHell)

You can use an SSH client program to access the CLI. The following figure shows an example using a text-based SSH client program. Refer to the documentation that comes with your SSH program for information on using it.

The default login username is **admin** and password is **1234**. The username and password are case-sensitive.

Figure 8 SSH Login Example

```
C:\>ssh2 admin@192.168.1.1
Host key not found from database.
Key fingerprint:
xolor-takel-fipef-zevit-visom-gydog-vetan-bisol-lysob-cuvun-muxex
You can get a public key's fingerprint by running
% ssh-keygen -F publickey.pub
on the keyfile.
Are you sure you want to continue connecting (yes/no)? yes

Host key saved to C:/Documents and Settings/user/Application Data/SSH/
hostkeys/
ey_22_192.168.1.1.pub
host key for 192.168.1.1, accepted by user Tue Aug 09 2005 07:38:28
admin's password:
Authentication successful.
```

1.3 How to Find Commands in this Guide

You can simply look for the feature chapter to find commands. In addition, you can use one of the following to look up specific commands.

- Commands in Order of Appearance right after this chapter. This section lists the commands in the order that they appear in this guide.
- List of Commands (Alphabetical) at the end of the guide. This section lists the commands in alphabetical order that they appear in this guide.

If you are looking at the CLI Reference Guide electronically, you might have additional options (for example, bookmarks or **Find...**) as well.

1.4 How Commands Are Explained

Each chapter explains the commands for one keyword. The chapters are divided into the following sections.

1.4.1 Background Information (Optional)

See the User's Guide for background information about most features.

This section provides background information about features that you cannot configure in the web configurator. In addition, this section identifies related commands in other chapters.

1.4.2 Command Input Values (Optional)

This section lists common input values for the commands for the feature in one or more tables

1.4.3 Command Summary

This section lists the commands for the feature in one or more tables.

1.4.4 Command Examples (Optional)

This section contains any examples for the commands in this feature.

1.4.5 Command Syntax

The following conventions are used in this User's Guide.

- A command or keyword in `courier new` must be entered literally as shown. Do not abbreviate.
- Values that you need to provide are in *`italics`*.
- Required fields that have multiple choices are enclosed in curly brackets `{}`.
- A range of numbers is enclosed in angle brackets `<>`.
- Optional fields are enclosed in square brackets `[]`.
- The `|` symbol means OR.

For example, look at the following command to create a TCP/UDP service object.

```
service-object object-name {tcp | udp} {eq <1..65535> | range <1..65535>
<1..65535>}
```

1. Enter `service-object` exactly as it appears.
2. Enter the name of the object where you see *`object-name`*.
3. Enter `tcp` or `udp`, depending on the service object you want to create.
4. Finally, do one of the following.
   - Enter `eq` exactly as it appears, followed by a number between 1 and 65535.
   - Enter `range` exactly as it appears, followed by two numbers between 1 and 65535.

1.4.6 Changing the Password

It is highly recommended that you change the password for accessing the ZyWALL. See Section 23.2 on page 172 for the appropriate commands.

1.5 CLI Modes

You run CLI commands in one of several modes.

Table 2 CLI Modes

	USER	PRIVILEGE	CONFIGURATION	SUB-COMMAND
What **Guest** users can do	Unable to access	Unable to access	Unable to access	Unable to access
What **User** users can do	• Look at (but not run) available commands	Unable to access	Unable to access	Unable to access
What **Limited-Admin** users can do	• Look at system information (like **Status** screen) • Run basic diagnostics	• Look at system information (like **Status** screen) • Run basic diagnostics	Unable to access	Unable to access
What **Admin** users can do	• Look at system information (like **Status** screen) • Run basic diagnostics	• Look at system information (like **Status** screen) • Run basic diagnostics	• Configure simple features (such as an address object) • Create or remove complex parts (such as an interface)	• Configure complex parts (such as an interface) in the ZyWALL
How you enter it	Log in to the ZyWALL	Type **enable** in **User** mode	Type **configure terminal** in **User** or **Privilege** mode	Type the command used to create the specific part in **Configuration** mode

What the prompt looks like	`Router>`	`Router#`	`Router(config)#`	(varies by part)
				`Router(zone)#`
				`Router(config-if-ge)#`
				`...`

How you exit it	Type **exit**	Type **disable**	Type **exit**	Type **exit**

See Chapter 23 on page 171 for more information about the user types. **User** users can only log in, look at (but not run) the available commands in **User** mode, and log out. **Limited-Admin** users can look at the configuration in the web configurator and CLI, and they can run basic diagnostics in the CLI. **Admin** users can configure the ZyWALL in the web configurator or CLI.

At the time of writing, there is not much difference between **User** and **Privilege** mode for admin users. This is reserved for future use.

1.6 Shortcuts and Help

1.6.1 List of Available Commands

A list of valid commands can be found by typing ? or [TAB] at the command prompt. To view a list of available commands within a command group, enter <command> ? or <command> [TAB].

Figure 9 Help: Available Commands Example 1

```
Router> ?
apply
clear
configure
copy
delete
 ------------------[Snip]--------------------
run
setenv
show
traceroute
write
Router>
```

Figure 10 Help: Available Command Example 2

```
Router> show ?
aaa
account
address-object
alg
 ------------------[Snip]--------------------
username
users
version
vrrp
zone
Router> show
```

1.6.2 List of Sub-commands or Required User Input

To view detailed help information for a command, enter <command> <sub command> ?.

Figure 11 Help: Sub-command Information Example

```
Router(config)# ip telnet server ?
;
<cr>
access-group
port
|
Router(config)# ip telnet server
```

Figure 12 Help: Required User Input Example

```
Router(config)# ip telnet server port ?
<1..65535>
Router(config)# ip telnet server port
```

1.6.3 Entering Partial Commands

The CLI does not accept partial or incomplete commands. You may enter a unique part of a command and press [TAB] to have the ZyWALL automatically display the full command.

For example, if you enter **config** and press [TAB] , the full command of **configure** automatically displays.

If you enter a partial command that is not unique and press [TAB], the ZyWALL displays a list of commands that start with the partial command.

Figure 13 Non-Unique Partial Command Example

```
Router# c [TAB]
clear      configure  copy
Router# co [TAB]
configure  copy
```

1.6.4 Entering a ? in a Command

Typing a ? (question mark) usually displays help information. However, some commands allow you to input a ?, for example as part of a string. Press [CTRL+V] on your keyboard to enter a ? without the ZyWALL treating it as a help query.

1.6.5 Command History

The ZyWALL keeps a list of commands you have entered for the current CLI session. You can use any commands in the history again by pressing the up (↑) or down (↓) arrow key to scroll through the previously used commands and press [ENTER].

1.6.6 Navigation

Press [CTRL]+A to move the cursor to the beginning of the line. Press [CTRL]+E to move the cursor to the end of the line.

1.6.7 Erase Current Command

Press [CTRL]+U to erase whatever you have currently typed at the prompt (before pressing [ENTER]).

1.7 Input Values

You can use the ? or [TAB] to get more information about the next input value that is required for a command. In some cases, the next input value is a string whose length and allowable characters may not be displayed in the screen. For example, in the following example, the next input value is a string called <description>.

```
Router# configure terminal
Router(config)# interface ge1
Router(config-if-ge)# description
<description>
```

The following table provides more information about input values like <description>.

Table 3 Input-Value Formats for Strings in CLI Commands

TAG	# VALUES	LEGAL VALUES
*	1	*
all	--	ALL
authentication key	Used in IPSec SA	
	32-40 16-20	“0x” or “0X” + 32-40 hexadecimal values alphanumeric or ;|`~!@#$%^&*()_+\\{}':,./<>=-
	Used in MD5 authentication keys for RIP/OSPF and text authentication key for RIP	
	0-16	alphanumeric or _-
	Used in text authentication keys for OSPF	
	0-8	alphanumeric or _-
certificate name	1-31	alphanumeric or ;`~!@#$%^&()_+[\]{}',.=-
community string	0-63	alphanumeric or .- first character: alphanumeric or -
connection_id	1+	alphanumeric or -_:
contact	1-61	alphanumeric, spaces, or '()+,/:=?;!*#@$_%-.
country code	0 or 2	alphanumeric
custom signature file name	0-30	alphanumeric or _-. first character: letter
description	Used in keyword criteria for log entries	
	1-64	alphanumeric, spaces, or '()+,/:=?;!*#@$_%-.
	Used in other commands	
	1-61	alphanumeric, spaces, or '()+,/:=?;!*#@$_%-
distinguished name	1-511	alphanumeric, spaces, or .@=,_-

Table 3 Input-Value Formats for Strings in CLI Commands (continued)

TAG	# VALUES	LEGAL VALUES
domain name	Used in content filtering	
	0+	lower-case letters, numbers, or .-
	Used in ip dns server	
	0-247	alphanumeric or .- first character: alphanumeric or -
	Used in domainname, ip dhcp pool, and ip domain	
	0-254	alphanumeric or ._- first character: alphanumeric or -
email	1-63	alphanumeric or .@_-
e-mail	1-64	alphanumeric or .@_-
encryption key	16-64 8-32	“0x” or “0X” + 16-64 hexadecimal values alphanumeric or ;|`~!@#$%^&*()_+\\{}':,./<>=-
file name	0-31	alphanumeric or _-
filter extension	1-256	alphanumeric, spaces, or '()+,/:=?;!*#@$_%.-
fqdn	Used in ip dns server	
	0-252	alphanumeric or .- first character: alphanumeric or -
	Used in ip ddns, time server, device HA, VPN, certificates, and interface ping check	
	0-254	alphanumeric or .- first character: alphanumeric or -
full file name	0-256	alphanumeric or _/.-
hostname	Used in hostname command	
	0-63	alphanumeric or .-_ first character: alphanumeric or -
	Used in other commands	
	0-252	alphanumeric or .- first character: alphanumeric or -
import configuration file	1-26+”.conf”	alphanumeric or ;`~!@#$%^&()_+[]{}',.=- add “.conf” at the end
import shell script	1-26+”.zysh”	alphanumeric or ;`~!@#$%^&()_+[]{}',.=- add “.zysh” at the end
initial string	1-64	alphanumeric, spaces, or '()+,/:=!*#@$_%-.&
isp account password	0-63	alphanumeric or `~!@#$%^&*()_\-+={}|\;:'<,>./
isp account username	0-30	alphanumeric or -_@$./
key length	--	512, 768, 1024, 1536, 2048
license key	25	“S-” + 6 upper-case letters or numbers + “-” + 16 upper-case letters or numbers
mac address	--	aa:bb:cc:dd:ee:ff (hexadecimal)
mail server fqdn		lower-case letters, numbers, or -.
name	1-31	alphanumeric or _-
notification message	1-81	alphanumeric, spaces, or '()+,/:=?;!*#@$_%-

Table 3 Input-Value Formats for Strings in CLI Commands (continued)

TAG	# VALUES	LEGAL VALUES
password: less than 15 chars	1-15	alphanumeric or `~!@#$%^&*()_\-+={}|\;:'<,>./
password: less than 8 chars	1-8	alphanumeric or ;/?:@&=+$\.-_!~*'()%,#$
password	Used in user and ip ddns	
	1-63	alphanumeric or `~!@#$%^&*()_-+={}|\;:'<,>./
	Used in e-mail log profile SMTP authentication	
	1-63	alphanumeric or `~!@#$%^&*()_-+={}|\;:'<>./
	Used in device HA synchronization	
	1-63	alphanumeric or ~#%^*_-={}:,.
	Used in registration	
	6-20	alphanumeric or .@_-
phone number	1-20	numbers or ,+
preshared key	16-64	“0x” or “0X” + 16-64 hexadecimal values alphanumeric or ;|`~!@#$%^&*()_+\{}':,./<>=-
profile name	0-30	alphanumeric or _- first character: letters or _-
proto name	1-16	lower-case letters, numbers, or -
protocol name	0-30	alphanumeric or _- first character: letters or _-
quoted string less than 127 chars	1-255	alphanumeric, spaces, or ;/?:@&=+$\.-_!~*'()%,
quoted string less than 63 chars	1-63	alphanumeric, spaces, or ;/?:@&=+$\.-_!~*'()%
quoted string	0+	alphanumeric, spaces, or punctuation marks enclosed in double quotation marks (“) must put a backslash (\) before double quotation marks that are part of input value itself
service name	0-63	alphanumeric or -_@$./
spi	2-8	hexadecimal
string less than 15 chars	1-15	alphanumeric or -_
string: less than 63 chars	1-63	alphanumeric or `~!@#$%^&*()_-+={}|\;:'<,>./
string	1+	alphanumeric or -_@
subject	1-61	alphanumeric, spaces, or '()+,./:=?;!*#@$_%-
system type	0-2	hexadecimal
timezone [-+]*hh*	--	-12 through +12 (with or without “+”)
url	1-511	alphanumeric or '()+,/:.=?;!*#@$_%-

Table 3 Input-Value Formats for Strings in CLI Commands (continued)

TAG	# VALUES	LEGAL VALUES
url	Used in content filtering redirect	
	“http://”+ “https://”+	alphanumeric or ;/?:@&=+$\.-_!~*'()%, starts with “http://” or “https://” may contain one pound sign (#)
	Used in other content filtering commands	
	“http://”+	alphanumeric or ;/?:@&=+$\.-_!~*'()%, starts with “http://” may contain one pound sign (#)
user name	Used in VPN extended authentication	
	1-31	alphanumeric or _-
	Used in other commands	
	0-30	alphanumeric or _- first character: letters or _-
username	6-20	alphanumeric or .@_- registration
user name	1+	alphanumeric or -_. logging commands
user@domainname	1-80	alphanumeric or .@_-
vrrp group name: less than 15 chars	1-15	alphanumeric or _-
week-day sequence, i.e. 1=first,2=second	1	1-4
xauth method	1-31	alphanumeric or _-
xauth password	1-31	alphanumeric or ;|`~!@#$%^&*()_+\{}':,./<>=-
mac address	0-12 (even number)	hexadecimal for example: aa aabbcc aabbccddeeff

1.8 Ethernet Interfaces

When you need to specify an Ethernet interface, remember that the number of interfaces available depends on the ZyWALL model. For example, the ZyWALL 1050 has 5 Ethernet interfaces and the ZyWALL USG 300 has 7.

1.9 Saving Configuration Changes

Use the `write` command to save the current configuration to the ZyWALL.

Always save the changes before you log out after each management session. All unsaved changes will be lost after the system restarts.

1.10 Logging Out

Enter the `exit` or `end` command in configure mode to go to privilege mode..

Enter the `exit` command in user mode or privilege mode to log out of the CLI.

2

User and Privilege Modes

This chapter describes how to use these two modes.

2.1 User And Privilege Modes

This is the mode you are in when you first log into the CLI. (Do not confuse ‘user mode’ with types of user accounts the ZyWALL uses. See Chapter 23 on page 171 for more information about the user types. ‘User’ type accounts can only run ‘exit’ in this mode. However, they may need to log into the device in order to be authenticated for ‘user-aware’ policies, for example a firewall rule that a particular user is exempt from or a VPN tunnel that only certain people may use.)

Type ‘enable’ to go to ‘privilege mode’. No password is required. All commands can be run from here except those marked with an asterisk. Many of these commands are for trouble-shooting purposes, for example the htm (hardware test module) and debug commands. Customer support may ask you to run some of these commands and send the results if you need assistance troubleshooting your device.

For admin logins, all commands are visible in ‘user mode’ but not all can be run there. The following table displays which commands can be run in ‘user mode’. All commands can be run in ‘privilege mode’.

The `htm` and `psm` commands are for ZyXEL’s internal manufacturing process.

Table 4 User (U) and Privilege (P) Mode Commands

COMMAND	MODE	DESCRIPTION
`apply`	P	Applies a configuration file.
`atse`	U/P	Displays the seed code
`clear`	U/P	Clears system or debug logs or DHCP binding.
`configure`	U/P	Use ‘configure terminal’ to enter configuration mode.
`copy`	P	Copies configuration files.
`debug (*)`	U/P	For support personnel only! The device needs to have the debug flag enabled.
`delete`	P	Deletes configuration files.
`details`	P	Performs diagnostic commands.

Table 4 User (U) and Privilege (P) Mode Commands (continued)

COMMAND	MODE	DESCRIPTION
diag	P	Provided for support personnel to collect internal system information. It is not recommended that you use these.
diag-info	P	Has the ZyWALL create a new diagnostic file.
dir	P	Lists files in a directory.
disable	U/P	Goes from privilege mode to user mode
enable	U/P	Goes from user mode to privilege mode
exit	U/P	Goes to a previous mode or logs out.
htm	U/P	Goes to htm (hardware test module) mode. Note: These commands are for ZyXEL's internal manufacturing process.
interface	U/P	Dials or disconnects an interface.
no packet-trace	U/P	Turns of packet tracing.
nslookup	U/P	Resolves an IP address to a host name and vice-versa.
packet-trace	U/P	Performs a packet trace.
ping	U/P	Pings an IP address or host name.
psm	U/P	Goes to psm (product support module) mode. Note: These commands are for ZyXEL's internal manufacturing process.
reboot	P	Restarts the device.
release	P	Releases DHCP information from an interface.
rename	P	Renames a configuration file.
renew	P	Renews DHCP information for an interface.
run	P	Runs a script.
setenv	U/P	Turns stop-on-error on (terminates booting if an error is found in a configuration file) or off (ignores configuration file errors and continues booting).
show	U/P	Displays command statistics. See the associated command chapter in this guide.
shutdown	P	Writes all cached data to disk and stops the system processes. It does not turn off the power.
traceroute	P	Traces the route to the specified host name or IP address.
write	P	Saves the current configuration to the ZyWALL. All unsaved changes are lost after the ZyWALL restarts.

Subsequent chapters in this guide describe the configuration commands. User/privilege mode commands that are also configuration commands (for example, 'show') are described in more detail in the related configuration command chapter.

2.1.1 Debug Commands

Debug commands marked with an asterisk (*) are not available when the debug flag is on and are for service personnel use only. The debug commands follow a syntax that is Linux-based, so if there is a Linux equivalent, it is displayed in this chapter for your reference.

Table 5 Debug Commands

COMMAND SYNTAX	DESCRIPTION	LINUX COMMAND EQUIVALENT
`debug app`	Application patrol debug command	
`debug app show l7protocol (*)`	Shows app patrol protocol list	`> cat /etc/l7_protocols/ protocol.list`
`debug ca (*)`	Certificate debug commands	
`debug cmdexec {on|off}`	ZyShell debug commands	
`debug core-file (*)`	Display/Flush/Move system core files	
`debug device-ha (*)`	Device HA debug commands	
`debug force-auth (*)`	Force authentication debug commands	
`debug gui (*)`	GUI cgi related debug commands	
`debug gui show cgidump (*)`	Shows gui cgi command buffer	`> cat /tmp/zysh-cgi.dump`
`debug hardware (*)`	Hardware debug commands	
`debug idp`	IDP debug command	
`debug interface ifconfig [interface]`	Shows system interfaces detail	`> ifconfig [interface]`
`debug kernel (*)`	Kernel debug commands	
`debug myzyxel server (*)`	Myzyxel.com debug commands	
`debug network arpignore (*)`	Enable/Display the ignoring of ARP respondes for interfaces which don't own the IP address	`cat /proc/sys/net/ipv4/ conf/*/arp_ignore`
`debug no myzyxel server (*)`	Set the myZyXEL.com registration/ update server to the official site	
`debug policy-route (*)`	Policy route debug command	
`debug service-register`	Service registration debug command	
`debug show myzyxel server status`	Myzyxel.com debug commands	
`debug system dmesg`	Shows kernel debug messages	`> demsg`
`debug system free`	Shows free and used memory in the system	`> free`
`debug system ip addr`	Shows interface IP address information	`> ip addr`
`debug system ip route get ip_addr`	Shows IP routing to the specified IP address.	`> ip route`
`debug system ip route show table {default|local|main|num}`	Shows IP routing information	
`debug system ip rule`	Shows IP routing tables	`> ip rule`
`debug system ipcs`	Shows system IPC information	`> ipcs`

Table 5 Debug Commands (continued)

COMMAND SYNTAX	DESCRIPTION	LINUX COMMAND EQUIVALENT
`debug system iptables list chain {forward|prerouting|postrouting|input|output|pre_id}`	Shows netfilter information	`> iptables –L –t {nat|filter|mangle|vpn|zymark|vpnid|cfilter}`
`debug system iptables list table {nat|filter|mangle|vpn|zymark|vpnid|cfilter}`	Shows system netfilter information.	
`debug system lsmod (*)`	Shows system kernel modules	`> lsmod`
`debug system ps`	Shows system process information	`> ps aux`
`debug system show conntrack`	Shows system sessions list	`> cat /proc/net/ip_conntrack`
`debug system show cpu status`	Shows system CPU utilization.	
`debug system show ksyms (*)`	Shows kernel symbols	`> cat /proc/ksyms`
`debug system show slabinfo`	Shows kernel cache information	`> cat /proc/slabinfo`
`debug system tc {class|filter|qdisc} list`	Shows system traffic control information	`> tc {class|filter|qdisc} list`
`debug system tcpdump interface`	Dump traffic on a network	`> tcpdump –i interface`
`debug system vmstat`	Shows system memory statistics	`> vmstat`
`debug update server (*)`	Update server debug command	
`debug zyinetpkt {set|show} {desitnation|hooknum|protocol|enable|priority|source}`	ZLD internal packet trace debug command	

3

Status

This chapter explains some commands you can use to display information about the ZyWALL's current operational state. You must use the `configure terminal` command before you can use these commands.

Table 6 Status Show Commands

COMMAND	DESCRIPTION
`show cpu status`	Displays the CPU utilization.
`show disk`	Displays the disk utilization.
`show fan-speed`	Displays the current fan speed.
`show mac`	Displays the ZyWALL's MAC address.
`show mem status`	Displays what percentage of the ZyWALL's memory is currently being used.
`show ram-size`	Displays the size of the ZyWALL's on-board RAM.
`show serial-number`	Displays the serial number of this ZyWALL.
`show socket listen`	Displays the ZyWALL's listening ports
`show socket open`	Displays the ports that are open on the ZyWALL.
`show system uptime`	Displays how long the ZyWALL has been running since it last restarted or was turned on.
`show version`	Displays the ZyWALL's model, firmware and build information.

Here are examples of the commands that display the CPU and disk utilization.

```
Router(config)# show cpu status
CPU utilization: 0 %
CPU utilization for 1 min: 0 %
CPU utilization for 5 min: 0 %
Router(config)# show disk
;      <cr>   |
Router(config)# show disk
No. Disk                Size(MB)        Usage
================================================================================
1   image               67              83%
2   onboard flash       163             15%
```

Here are examples of the commands that display the fan speed, MAC address, memory usage, RAM size, and serial number.

```
Router(config)# show fan-speed
FAN1(F00)(rpm): limit(hi)=6500, limit(lo)=1400, max=6650, min=6642, avg=6644
FAN2(F01)(rpm): limit(hi)=6500, limit(lo)=1400, max=6809, min=6783, avg=6795
FAN3(F02)(rpm): limit(hi)=6500, limit(lo)=1400, max=6683, min=6666, avg=6674
FAN4(F03)(rpm): limit(hi)=6500, limit(lo)=1400, max=6633, min=6617, avg=6627
Router(config)# show mac
MAC address: 00:13:49:82:18:28-2c
Router(config)# show mem status
memory usage: 39%
Router(config)# show ram-size
ram size: 510MB
Router(config)# show serial-number
serial number: S060Z12020460
```

Here is an example of the command that displays the listening ports.

```
Router(config)# show socket listen
No.   Proto Local_Address         Foreign_Address       State
==========================================================================
1     tcp   0.0.0.0:2601          0.0.0.0:0             LISTEN
2     tcp   0.0.0.0:2602          0.0.0.0:0             LISTEN
3     tcp   127.0.0.1:10443       0.0.0.0:0             LISTEN
4     tcp   0.0.0.0:2604          0.0.0.0:0             LISTEN
5     tcp   0.0.0.0:80            0.0.0.0:0             LISTEN
6     tcp   127.0.0.1:8085        0.0.0.0:0             LISTEN
7     tcp   1.1.1.1:53            0.0.0.0:0             LISTEN
8     tcp   172.23.37.205:53      0.0.0.0:0             LISTEN
9     tcp   10.0.0.8:53           0.0.0.0:0             LISTEN
10    tcp   172.23.37.240:53      0.0.0.0:0             LISTEN
11    tcp   192.168.1.1:53        0.0.0.0:0             LISTEN
12    tcp   127.0.0.1:53          0.0.0.0:0             LISTEN
13    tcp   0.0.0.0:21            0.0.0.0:0             LISTEN
14    tcp   0.0.0.0:22            0.0.0.0:0             LISTEN
15    tcp   127.0.0.1:953         0.0.0.0:0             LISTEN
16    tcp   0.0.0.0:443           0.0.0.0:0             LISTEN
17    tcp   127.0.0.1:1723        0.0.0.0:0             LISTEN
```

Here is an example of the command that displays the open ports.

```
Router(config)# show socket open
No.   Proto Local_Address         Foreign_Address       State
=============================================================================
1     tcp   172.23.37.240:22      172.23.37.10:1179     ESTABLISHED
2     udp   127.0.0.1:64002       0.0.0.0:0
3     udp   0.0.0.0:520           0.0.0.0:0
4     udp   0.0.0.0:138           0.0.0.0:0
5     udp   0.0.0.0:138           0.0.0.0:0
6     udp   0.0.0.0:138           0.0.0.0:0
7     udp   0.0.0.0:138           0.0.0.0:0
8     udp   0.0.0.0:138           0.0.0.0:0
9     udp   0.0.0.0:138           0.0.0.0:0
10    udp   0.0.0.0:138           0.0.0.0:0
11    udp   0.0.0.0:32779         0.0.0.0:0
12    udp   192.168.1.1:4500      0.0.0.0:0
13    udp   1.1.1.1:4500          0.0.0.0:0
14    udp   10.0.0.8:4500         0.0.0.0:0
15    udp   172.23.37.205:4500    0.0.0.0:0
16    udp   172.23.37.240:4500    0.0.0.0:0
17    udp   127.0.0.1:4500        0.0.0.0:0
18    udp   127.0.0.1:63000       0.0.0.0:0
19    udp   127.0.0.1:63001       0.0.0.0:0
20    udp   127.0.0.1:63002       0.0.0.0:0
21    udp   0.0.0.0:161           0.0.0.0:0
22    udp   127.0.0.1:63009       0.0.0.0:0
23    udp   192.168.1.1:1701      0.0.0.0:0
24    udp   1.1.1.1:1701          0.0.0.0:0
25    udp   10.0.0.8:1701         0.0.0.0:0
26    udp   172.23.37.205:1701    0.0.0.0:0
27    udp   172.23.37.240:1701    0.0.0.0:0
28    udp   127.0.0.1:1701        0.0.0.0:0
29    udp   127.0.0.1:63024       0.0.0.0:0
30    udp   127.0.0.1:30000       0.0.0.0:0
31    udp   1.1.1.1:53            0.0.0.0:0
32    udp   172.23.37.205:53      0.0.0.0:0
33    udp   10.0.0.8:53           0.0.0.0:0
34    udp   172.23.37.240:53      0.0.0.0:0
35    udp   192.168.1.1:53        0.0.0.0:0
36    udp   127.0.0.1:53          0.0.0.0:0
37    udp   0.0.0.0:67            0.0.0.0:0
38    udp   127.0.0.1:63046       0.0.0.0:0
39    udp   127.0.0.1:65097       0.0.0.0:0
40    udp   0.0.0.0:65098         0.0.0.0:0
41    udp   192.168.1.1:500       0.0.0.0:0
42    udp   1.1.1.1:500           0.0.0.0:0
43    udp   10.0.0.8:500          0.0.0.0:0
44    udp   172.23.37.205:500     0.0.0.0:0
45    udp   172.23.37.240:500     0.0.0.0:0
46    udp   127.0.0.1:500         0.0.0.0:0
```

Here are examples of the commands that display the system uptime and model, firmware, and build information.

```
Router(config)# show system uptime
system uptime: 13 days, 21:01:17
Router(config)# show version
ZyXEL Communications Corp.
model           : ZyWALL 1050
firmware version: 2.00(XL.0)b3
BM version      : 1.08
build date      : 2007-03-30 17:42:56
```

4

Registration

This chapter introduces myzyxel.com and shows you how to register the ZyWALL for IDPIDP/AppPatrol, anti-virus, and content filtering services using commands.

4.1 myZyXEL.com overview

myZyXEL.com is ZyXEL's online services center where you can register your ZyWALL and manage subscription services available for the ZyWALL.

You need to create an account before you can register your device and activate the services at myZyXEL.com.

You can directly create a myZyXEL.com account, register your ZyWALL and activate a service using the **Licensing** > **Registration** screens. Alternatively, go to http://www.myZyXEL.com with the ZyWALL's serial number and LAN MAC address to register it. Refer to the web site's on-line help for details.

To activate a service on a ZyWALL, you need to access myZyXEL.com via that ZyWALL.

4.1.1 Subscription Services Available on the ZyWALL

The ZyWALL can use anti-virus, IDP/AppPatrol (Intrusion Detection and Prevention and application patrol), SSL VPN, and content filtering subscription services.

- The ZyWALL's anti-virus packet scanner uses the signature files on the ZyWALL to detect virus files. , your ZyWALL scans files transmitting through the enabled interfaces into the network. After the service is activated, the ZyWALL can download the up-to-date signature files from the update server (http://myupdate.zywall.zyxel.com).

- The IDP and application patrol features use the IDP/AppPatrol signature files on the ZyWALL. IDP detects malicious or suspicious packets and responds immediately. Application patrol conveniently manages the use of various applications on the network. After the service is activated, the ZyWALL can download the up-to-date signature files from the update server (http://myupdate.zywall.zyxel.com).
- SSL VPN tunnels provide secure network access to remote users. You can purchase and enter a license key to have the ZyWALL use more SSL VPN tunnels.
- The content filter allows or blocks access to web sites. Subscribe to category-based content filtering to block access to categories of web sites based on content. Your ZyWALL accesses an external database that has millions of web sites categorized based on content. You can have the ZyWALL block, block and/or log access to web sites based on these categories.
- You will get automatic e-mail notification of new signature releases from mySecurityZone after you activate the IDP/AppPatrol service. You can also check for new signatures at http://mysecurity.zyxel.com.

See the respective chapters for more information about these features.

To update the signature file or use a subscription service, you have to register the ZyWALL and activate the corresponding service at myZyXEL.com (through the ZyWALL).

4.2 Registration Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 7 Input Values for General Registration Commands

LABEL	DESCRIPTION
user_name	The user name of your myZyXEL.com account. You may use six to 20 alphanumeric characters (and the underscore). Spaces are not allowed.
password	The password for the myZyXEL.com account. You may use six to 20 alphanumeric characters (and the underscore). Spaces are not allowed.

The following table describes the commands available for registration. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 8 Command Summary: Registration

COMMAND	DESCRIPTION
`device-register checkuser` *user_name*	Checks if the user name exists in the myZyXEL.com database.
`device-register username` *user_name* `password` *password* `[e-mail` *user@domainname* `country-code` *country_code*`]`	Registers the device with an existing account or creates a new account and registers the device at one time. *country_code*: see Table 9 on page 40

Table 8 Command Summary: Registration (continued)

COMMAND	DESCRIPTION
`service-register checkexpire`	Gets information of all service subscriptions from myZyXEL.com and updates the status table.
`service-register service-type standard license-key` *`key_value`*	Activates a standard service subscription with the license key.
`service-register service-type trial service {all|content-filter|idp|av}`	Activates the trial service subscription(s).
`show device-register status`	Displays whether the device is registered and account information.
`show service-register status {all|content-filter|idp|sslvpn|av}`	Displays service license information.

4.2.1 Command Examples

The following commands allow you to register your device with an existing account or create a new account and register the device at one time, and activate a trial service subscription.

```
Router# configure terminal
Router(config)# device-register username alexctsui password 123456
Router(config)# service-register service-type trial service content-filter
```

The following command displays the account information and whether the device is registered.

```
Router# configure terminal
Router(config)# show device-register status
username               : alexctsui
password               : 123456
device register status : yes
expiration self check  : no
```

The following command displays the service registration status and type and how many days remain before the service expires.

```
Router# configure terminal
Router(config)# show service-register status all
Service              Status       Type     Count    Expiration
==============================================================================
IDP Signature        Licensed     Standard N/A      176
Anti-Virus           Not Licensed None     N/A      0
SSLVPN               Not Licensed None     5        N/A
Content-Filter       Not Licensed None     N/A      0
```

4.3 Country Code

The following table displays the number for each country.

Table 9 Country Codes

COUNTRY CODE	COUNTRY NAME	COUNTRY CODE	COUNTRY NAME
001	Afghanistan	002	Albania
003	Algeria	004	American Samoa
005	Andorra	006	Angola
007	Anguilla	008	Antarctica
009	Antigua & Barbuda	010	Argentina
011	Armenia	012	Aruba
013	Ascension Island	014	Australia
015	Austria	016	Azerbaijan
017	Bahamas	018	Bahrain
019	Bangladesh	020	Barbados
021	Belarus	022	Belgium
023	Belize	024	Benin
025	Bermuda	026	Bhutan
027	Bolivia	028	Bosnia and Herzegovina
029	Botswana	030	Bouvet Island
031	Brazil	032	British Indian Ocean Territory
033	Brunei Darussalam	034	Bulgaria
035	Burkina Faso	036	Burundi
037	Cambodia	038	Cameroon
039	Canada	040	Cape Verde
041	Cayman Islands	042	Central African Republic
043	Chad	044	Chile
045	China	046	Christmas Island
047	Cocos (Keeling) Islands	048	Colombia
049	Comoros	050	Congo, Democratic Republic of the
051	Congo, Republic of	052	Cook Islands
053	Costa Rica	054	Cote d'Ivoire
055	Croatia/Hrvatska	056	Cyprus
057	Czech Republic	058	Denmark
059	Djibouti	060	Dominica
061	Dominican Republic	062	East Timor
063	Ecuador	064	Egypt
065	El Salvador	066	Equatorial Guinea
067	Eritrea	068	Estonia
069	Ethiopia	070	Falkland Islands (Malvina)

Table 9 Country Codes (continued)

COUNTRY CODE	COUNTRY NAME	COUNTRY CODE	COUNTRY NAME
071	Faroe Islands	072	Fiji
073	Finland	074	France
075	France (Metropolitan)	076	French Guiana
077	French Polynesia	078	French Southern Territories
079	Gabon	080	Gambia
081	Georgia	082	Germany
083	Ghana	084	Gibraltar
085	Great Britain	086	Greece
087	Greenland	088	Grenada
089	Guadeloupe	090	Guam
091	Guatemala	092	Guernsey
093	Guinea	094	Guinea-Bissau
095	Guyana	096	Haiti
097	Heard and McDonald Islands	098	Holy See (City Vatican State)
099	Honduras	100	Hong Kong
101	Hungary	102	Iceland
103	India	104	Indonesia
105	Ireland	106	Isle of Man
107	Italy	108	Jamaica
109	Japan	110	Jersey
111	Jordan	112	Kazakhstan
113	Kenya	114	Kiribati
115	Korea, Republic of	116	Kuwait
117	Kyrgyzstan	118	Lao People’s Democratic Republic
119	Latvia	120	Lebanon
121	Lesotho	122	Liberia
123	Liechtenstein	124	Lithuania
125	Luxembourg	126	Macau
127	Macedonia, Former Yugoslav Republic	128	Madagascar
129	Malawi	130	Malaysia
131	Maldives	132	Mali
133	Malta	134	Marshall Islands
135	Martinique	136	Mauritania
137	Mauritius	138	Mayotte
139	Mexico	140	Micronesia, Federal State of
141	Moldova, Republic of	142	Monaco
143	Mongolia	144	Montserrat
145	Morocco	146	Mozambique

Table 9 Country Codes (continued)

COUNTRY CODE	COUNTRY NAME	COUNTRY CODE	COUNTRY NAME
147	Namibia	148	Nauru
149	Nepal	150	Netherlands
151	Netherlands Antilles	152	New Caledonia
153	New Zealand	154	Nicaragua
155	Niger	156	Nigeria
157	Niue	158	Norfolk Island
159	Northern Mariana Islands	160	Norway
161	Not Determined	162	Oman
163	Pakistan	164	Palau
165	Panama	166	Papua New Guinea
167	Paraguay	168	Peru
169	Philippines	170	Pitcairn Island
171	Poland	172	Portugal
173	Puerto Rico	174	Qatar
175	Reunion Island	176	Romania
177	Russian Federation	178	Rwanda
179	Saint Kitts and Nevis	180	Saint Lucia
181	Saint Vincent and the Grenadines	182	San Marino
183	Sao Tome and Principe	184	Saudi Arabia
185	Senegal	186	Seychelles
187	Sierra Leone	188	Singapore
189	Slovak Republic	190	Slovenia
191	Solomon Islands	192	Somalia
193	South Africa	194	South Georgia and the South Sandwich Islands
185	Spain	196	Sri Lanka
197	St Pierre and Miquelon	198	St. Helena
199	Suriname	200	Svalbard and Jan Mayen Islands
201	Swaziland	202	Sweden
203	Switzerland	204	Taiwan
205	Tajikistan	206	Tanzania
207	Thailand	208	Togo
209	Tokelau	210	Tonga
211	Trinidad and Tobago	212	Tunisia
213	Turkey	214	Turkmenistan
215	Turks and Caicos Islands	216	Tuvalu
217	US Minor Outlying Islands	218	Uganda
219	Ukraine	220	United Arab Emirates
221	United Kingdom	222	United States

Table 9 Country Codes (continued)

COUNTRY CODE	COUNTRY NAME	COUNTRY CODE	COUNTRY NAME
223	Uruguay	224	Uzbekistan
225	Vanuatu	226	Venezuela
227	Vietnam	228	Virgin Islands (British)
229	Virgin Islands (USA)	230	Wallis And Futuna Islands
231	Western Sahara	232	Western Samoa
233	Yemen	234	Yugoslavia
235	Zambia	236	Zimbabwe

PART II
Network

Interfaces (47)
Trunks (65)
Route (69)
Routing Protocol (75)
Zones (79)
DDNS (83)
Virtual Servers (85)
HTTP Redirect (87)
ALG (89)

5

Interfaces

This chapter shows you how to use interface-related commands.

5.1 Interface Overview

In general, an interface has the following characteristics.

- An interface is a logical entity through which (layer-3) packets pass.
- An interface is bound to a physical port or another interface.
- Many interfaces can share the same physical port.
- An interface is bound to at most one zone.
- Many interface can belong to the same zone.
- Layer-3 virtualization (IP alias, for example) is a kind of interface.

Some characteristics do not apply to some types of interfaces.

5.1.1 Types of Interfaces

You can create several types of interfaces in the ZyWALL.

- **Port groups** create a hardware connection between physical ports at the layer-2 (data link, MAC address) level.
- **Ethernet interfaces** are the foundation for defining other interfaces and network policies. RIP and OSPF are also configured in these interfaces.
- **VLAN interfaces** receive and send tagged frames. The ZyWALL automatically adds or removes the tags as needed. Each VLAN can only be associated with one Ethernet interface.
- **Bridge interfaces** create a software connection between Ethernet or VLAN interfaces at the layer-2 (data link, MAC address) level. Unlike port groups, bridge interfaces can take advantage of some security features in the ZyWALL. You can also assign an IP address and subnet mask to the bridge.
- **PPPoE/PPTP interfaces** support Point-to-Point Protocols (PPP). ISP accounts are required for PPPoE/PPTP interfaces.
- **Virtual interfaces** provide additional routing information in the ZyWALL. There are three types: **virtual Ethernet interfaces**, **virtual VLAN interfaces**, and **virtual bridge interfaces**.

- The **auxiliary interface**, along with an external modem, provides an interface the ZyWALL can use to dial out. This interface can be used as a backup WAN interface, for example. The auxiliary interface controls the **DIAL BACKUP** port (labeled **AUX** on some models).
- **Trunks** manage load balancing between interfaces.

Port groups, trunks, and the auxiliary interface have a lot of characteristics that are specific to each type of interface. These characteristics are listed in the following table and discussed in more detail below.

Table 10 Characteristics of Ethernet, VLAN, Bridge, PPPoE/PPTP, and Virtual Interfaces

CHARACTERISTICS	ETHERNET	VLAN	BRIDGE	PPPOE/PPTP	VIRTUAL
Name*	gex	vlanx	brx	pppx	**
IP Address Assignment					
static IP address	Yes	Yes	Yes	Yes	Yes
DHCP client	Yes	Yes	Yes	Yes	No
routing metric	Yes	Yes	Yes	Yes	Yes
Interface Parameters					
bandwidth restrictions	Yes	Yes	Yes	Yes	Yes
packet size (MTU)	Yes	Yes	Yes	Yes	No
traffic prioritization	Yes	Yes	Yes	Yes	No
DHCP					
DHCP server	Yes	Yes	Yes	No	No
DHCP relay	Yes	Yes	Yes	No	No
Ping Check	Yes	Yes	Yes	Yes	No

* - The format of interface names is strict. Each name consists of 2-4 letters (interface type), followed by a number (*x*, limited by the maximum number of each type of interface). For example, Ethernet interface names are ge1, ge2, ge3, ...; VLAN interfaces are vlan0, vlan1, vlan2, ...; and so on.

** - The names of virtual interfaces are derived from the interfaces on which they are created. For example, virtual interfaces created on Ethernet interface ge1 are called ge1:1, ge1:2, and so on. Virtual interfaces created on VLAN interface vlan2 are called vlan2:1, vlan2:2, and so on. You cannot specify the number after the colon(:) in the web configurator; it is a sequential number. You can specify the number after the colon if you use the CLI to set up a virtual Interface Parameters

5.1.2 Relationships Between Interfaces

In the ZyWALL, interfaces are usually created on top of other interfaces. Only Ethernet interfaces are created directly on top of the physical ports (or port groups). The relationships between interfaces are explained in the following table.

Table 11 Relationships Between Different Types of Interfaces

INTERFACE	REQUIRED PORT / INTERFACE
auxiliary interface	auxiliary port
port group	physical port
Ethernet interface	physical port port group
VLAN interface	Ethernet interface

Table 11 Relationships Between Different Types of Interfaces (continued)

INTERFACE	REQUIRED PORT / INTERFACE
bridge interface	Ethernet interface* VLAN interface*
PPPoE/PPTP interface	Ethernet interface* VLAN interface* bridge interface
virtual interface (virtual Ethernet interface) (virtual VLAN interface) (virtual bridge interface)	 Ethernet interface* VLAN interface* bridge interface
trunk	Ethernet interface VLAN interface bridge interface PPPoE/PPTP interface auxiliary interface

* - You cannot set up a PPPoE/PPTP interface, virtual Ethernet interface or virtual VLAN interface if the underlying interface is a member of a bridge. You also cannot add an Ethernet interface or VLAN interface to a bridge if the member interface has a virtual interface or PPPoE/PPTP interface on top of it.

5.2 Interface Commands Summary

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 12 Input Values for General Interface Commands

LABEL	DESCRIPTION
interface_name	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - 5 virtual interface on top of Ethernet interface: ge*x*:*y*, *x* = 1 - 5, *y* = 1 - 4 VLAN interface: vlan*x*, *x* = 0 - 31 virtual interface on top of VLAN interface: vlan*x*:*y*, *x* = 0 - 31, *y* = 1 - 4 bridge interface: br*x*, *x* = 0 - 11 virtual interface on top of bridge interface: br*x*:*y*, *x* = 0 - 11, *y* = 1 - 4 PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11
profile_name	The name of the DHCP pool. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
domain_name	Fully-qualified domain name. You may up to 254 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period.

The initial sections introduce commands that are supported by several types of interfaces. The remaining sections then introduce the unique commands for each type of interface.

5.2.1 Basic Interface Properties and IP Address Commands

This table lists basic properties and IP address commands.

Table 13 interface Commands: Basic Properties and IP Address Assignment

COMMAND	DESCRIPTION
`show interface {ethernet | vlan | bridge | ppp | auxiliary} status`	Displays the connection status of the specified type of interfaces.
`show interface {`*`interface_name`*` | ethernet | vlan | bridge | ppp | virtual ethernet | virtual vlan | virtual bridge | auxiliary | all}`	Displays information about the specified interface, specified type of interfaces, or all interfaces.
`show interface summary all`	Displays basic information about the interfaces.
`show interface summary all status`	Displays the connection status of the interfaces.
`[no] interface `*`interface_name`*	Creates the specified interface if necessary and enters sub-command mode. The no command deletes the specified interface.
`[no] shutdown`	Deactivates the specified interface. The no command activates it.
`[no] description `*`description`*	Specifies the description for the specified interface. The no command clears the description. *`description`*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`[no] ip address dhcp`	Makes the specified interface a DHCP client; the DHCP server gives the specified interface its IP address, subnet mask, and gateway. The no command makes the IP address static IP address for the specified interface. (See the next command to set this IP address.)
`[no] ip address `*`ip subnet_mask`	Assigns the specified IP address and subnet mask to the specified interface. The no command clears the IP address and the subnet mask.
`[no] ip gateway `*`ip`	Adds the specified gateway using the specified interface. The no command removes the gateway.
`ip gateway `*`ip`*` metric <0..15>`	Sets the priority (relative to every gateway on every interface) for the specified gateway. The lower the number, the higher the priority.

5.2.1.1 Basic Interface Properties Command Examples

The following commands make Ethernet interface ge1 a DHCP client.

```
Router# configure terminal
Router(config)# interface ge1
Router(config-if)# ip address dhcp
Router(config-if)# exit
```

5.2.2 Interface Parameter Commands

This table lists the commands for interface parameters (summarized in Table 10 on page 48).

Table 14 interface Commands: Interface Parameters

COMMAND	DESCRIPTION
`interface interface_name`	Enters sub-command mode.
`[no] upstream <0..1048576>`	Specifies the upstream bandwidth for the specified interface. The no command sets the upstream bandwidth to 1048576.
`[no] downstream <0..1048576>`	This is reserved for future use. Specifies the downstream bandwidth for the specified interface. The no command sets the downstream bandwidth to 1048576.
`[no] mtu <576..1500>`	Specifies the Maximum Transmission Unit, which is the maximum number of bytes in each packet moving through this interface. The ZyWALL divides larger packets into smaller fragments. The no command resets the MTU to 1500.
`traffic-prioritize {tcp-ack|content-filter|dns|ipsec-vpn|ssl-vpn} bandwidth <0..1048576> priority <1..7> [maximize-bandwidth-usage];`	Applies traffic priority when the interface sends TCP-ACK traffic, traffic for querying the content filter, traffic for resolving domain names, or encrypted traffic for an IPSec or SSL VPN tunnel. It also sets how much bandwidth the traffic can use and can turn on maximize bandwidth usage.
`traffic-prioritize {tcp-ack|content-filter|dns|ipsec-vpn|ssl-vpn} deactivate`	Turns off traffic priority settings for when the interface sends the specified type of traffic.

5.2.3 DHCP Setting Commands

This table lists DHCP setting commands. DHCP is based on DHCP pools. Create a DHCP pool if you want to assign a static IP address to a MAC address or if you want to specify the starting IP address and pool size of a range of IP addresses that can be assigned to DHCP clients. There are different commands for each configuration. Afterwards, in either case, you have to bind the DHCP pool to the interface.

Table 15 interface Commands: DHCP Settings

COMMAND	DESCRIPTION
`show ip dhcp pool [profile_name]`	Shows information about the specified DHCP pool or about all DHCP pools.
`ip dhcp pool rename profile_name profile_name`	Renames the specified DHCP pool from the first *profile_name* to the second *profile_name*.

Table 15 interface Commands: DHCP Settings (continued)

COMMAND	DESCRIPTION
`[no] ip dhcp pool` *`profile_name`*	Creates a DHCP pool if necessary and enters sub-command mode. You can use the DHCP pool to create a static entry or to set up a range of IP addresses to assign dynamically. • If you use the `host` command, the ZyWALL treats this DHCP pool as a static DHCP entry. • If you do not use the `host` command and use the `network` command, the ZyWALL treats this DHCP pool as a pool of IP addresses. • If you do not use the `host` command or the `network` command, the DHCP pool is not properly configured and cannot be bound to any interface. The `no` command removes the specified DHCP pool.
`show`	Shows information about the specified DHCP pool.
	Use the following commands if you want to create a static DHCP entry. If you do not use the `host` command, the commands that are not in this section have no effect, but you can still set them.
`[no] host` *`ip`*	Specifies the static IP address the ZyWALL should assign. Use this command, along with `hardware-address`, to create a static DHCP entry. Note: The IP address must be in the same subnet as the interface to which you plan to bind the DHCP pool. When this command is used, the ZyWALL treats this DHCP pool like a static entry, regardless of the `network` setting. The `no` command clears this field.
`[no] hardware-address` *`mac_address`*	Reserves the DHCP pool for the specified MAC address. Use this command, along with `host`, to create a static DHCP entry. The `no` command clears this field.
`[no] client-identifier` *`mac_address`*	Specifies the MAC address that appears in the DHCP client list. The `no` command clears this field.
`[no] client-name` *`host_name`*	Specifies the host name that appears in the DHCP client list. The `no` command clears this field. *`host_name`*: You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
	Use the following commands if you want to create a pool of IP addresses. These commands have no effect if you use the `host` command. You can still set them, however.

Table 15 interface Commands: DHCP Settings (continued)

COMMAND	DESCRIPTION
network IP/<1..32> network *ip mask* no network	Specifies the IP address and subnet mask of the specified DHCP pool. The subnet mask can be written in w.x.y.z format or in /<1..32> format. Note: The DHCP pool must have the same subnet as the interface to which you plan to bind it. The no command clears these fields.
[no] default-router *ip*	Specifies the default gateway DHCP clients should use. The no command clears this field.
[no] domain-name *domain_name*	Specifies the domain name assigned to DHCP clients. The no command clears this field.
[no] starting-address *ip* pool-size <1..65535>	Sets the IP start address and maximum pool size of the specified DHCP pool. The final pool size is limited by the subnet mask. Note: You must specify the network number first, and the start address must be in the same subnet. The no command clears the IP start address and maximum pool size.
[no] first-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns}	Sets the first DNS server to the specified IP address or the specified interface's first, second, or third DNS server. The no command resets the first DNS server setting to its default value.
[no] second-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns}	Sets the second DNS server to the specified IP address or the specified interface's first, second, or third DNS server. The no command resets the second DNS server setting to its default value.
[no] third-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns}	Sets the third DNS server to the specified IP address or the specified interface's first, second, or third DNS server. The no command resets the third DNS server setting to its default value.
[no] first-wins-server *ip*	Specifies the first WINS server IP address to assign to the remote users. The no command removes the setting.
[no] second-wins-server *ip*	Specifies the second WINS server IP address to assign to the remote users. The no command removes the setting.
[no] lease {<0..365> [<0..23> [<0..59>]] | infinite}	Sets the lease time to the specified number of days, hours, and minutes or makes the lease time infinite. The no command resets the first DNS server setting to its default value.
interface *interface_name*	Enters sub-command mode.
[no] ip dhcp-pool *profile_name*	Binds the specified interface to the specified DHCP pool. You have to remove any DHCP relays first. The no command removes the binding.

Table 15 interface Commands: DHCP Settings (continued)

COMMAND	DESCRIPTION
[no] ip helper-address *ip*	Creates the specified DHCP relay. You have to remove the DHCP pool first, if the DHCP pool is bound to the specified interface. The no command removes the specified DHCP relay.
release dhcp *interface-name*	Releases the TCP/IP configuration of the specified interface. The interface must be a DHCP client. This command is available in privilege mode, not configuration mode.
renew dhcp *interface-name*	Renews the TCP/IP configuration of the specified interface. The interface must be a DHCP client. This command is available in privilege mode, not configuration mode.
show ip dhcp binding [*ip*]	Displays information about DHCP bindings for the specified IP address or for all IP addresses.
clear ip dhcp binding {*ip* | *}	Removes the DHCP bindings for the specified IP address or for all IP addresses.

5.2.3.1 DHCP Setting Command Examples

The following example uses these commands to configure DHCP pool DHCP_TEST.

```
Router# configure terminal
Router(config)# ip dhcp pool DHCP_TEST
Router(config-ip-dhcp-pool)#  network 192.168.1.0 /24
Router(config-ip-dhcp-pool)#  domain-name zyxel.com.tw
Router(config-ip-dhcp-pool)#  first-dns-server 172.23.5.1
Router(config-ip-dhcp-pool)#  second-dns-server ge1 1st-dns
Router(config-ip-dhcp-pool)#  third-dns-server 172.23.5.2
Router(config-ip-dhcp-pool)#  default-router 192.168.1.1
Router(config-ip-dhcp-pool)#  lease 0 1 30
Router(config-ip-dhcp-pool)#  starting-address 192.168.1.10 pool-size 30
Router(config-ip-dhcp-pool)#  hardware-address 00:0F:20:74:C6:88
Router(config-ip-dhcp-pool)#  client-identifier 00:0F:20:74:C6:88
Router(config-ip-dhcp-pool)#  client-name TW12210
Router(config-ip-dhcp-pool)# exit
Router(config)#  interface ge1
Router(config-if)# ip dhcp-pool DHCP_TEST
Router(config-if)# exit
Router(config)# show ip dhcp server status
binding interface : ge1
  binding pool    : DHCP_TEST
```

5.2.4 Ping Check Commands

This table lists ping check commands

Table 16 interface Commands: Ping Check

COMMAND	DESCRIPTION
show ping-check [*interface_name*]	Displays information about ping check settings for the specified interface or for all interfaces.
interface *interface_name*	Enters sub-command mode.

Table 16 interface Commands: Ping Check (continued)

COMMAND	DESCRIPTION
`[no] ping-check activate`	Enables ping check for the specified interface. The no command disables ping check for the specified interface.
`ping-check {`*`domain_name`*` | `*`ip`*` | default-gateway}`	Specifies what the ZyWALL pings for the ping check; you can specify a fully-qualified domain name, IP address, or the default gateway for the interface.
`ping-check {`*`domain_name`*` | `*`ip`*` | default-gateway} period <5..30>`	Specifies what the ZyWALL pings for the ping check and sets the number of seconds between each ping check.
`ping-check {`*`domain_name`*` | `*`ip`*` | default-gateway} timeout <1..10>`	Specifies what the ZyWALL pings for the ping check and sets the number of seconds the ZyWALL waits for a response.
`ping-check {`*`domain_name`*` | `*`ip`*` | default-gateway} fail-tolerance <1..10>`	Specifies what the ZyWALL pings for the ping check and sets the number of times the ZyWALL times out before it stops routing through the specified interface.

5.2.5 Ethernet Interface Commands

This section identifies commands that support Ethernet interfaces.

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 17 Input Values for Ethernet Interface Commands

LABEL	DESCRIPTION
interface_name	The name of the interface. ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model.

5.2.5.1 RIP Commands

This table lists the commands for RIP settings.

Table 18 interface Commands: RIP Settings

COMMAND	DESCRIPTION
`router rip`	Enters sub-command mode.
`[no] network `*`interface_name`*	Enables RIP for the specified interface. The no command disables RIP for the specified interface.
`[no] passive-interface `*`interface_name`*	Sets the RIP direction of the specified interface to in-only. The no command makes RIP bi-directional in the specified interface.
`[no] outonly-interface `*`interface_name`*	Sets the RIP direction of the specified interface to out-only. The no command makes RIP bi-directional in the specified interface.
`interface `*`interface_name`*	Enters sub-command mode.
`[no] ip rip {send | receive} version <1..2>`	Sets the send or receive version to the specified version number. The no command sets the send or received version to the current global setting for RIP. See Section 8.2 on page 75.

Table 18 interface Commands: RIP Settings (continued)

COMMAND	DESCRIPTION
[no] ip rip v2-broadcast	Enables RIP-2 packets using subnet broadcasting. The no command uses multi-casting.
show rip {global | interface {all | *interface_name*}}	Displays RIP settings.

5.2.5.2 OSPF Commands

This table lists the commands for OSPF settings.

Table 19 interface Commands: OSPF Settings

COMMAND	DESCRIPTION
router ospf	Enters sub-command mode.
[no] network *interface_name* area *ip*	Makes the specified interface part of the specified area. The no command removes the specified interface from the specified area, disabling OSPF in this interface.
[no] passive-interface *interface_name*	Sets the OSPF direction of the specified interface to in-only. The no command makes OSPF bi-directional in the specified interface.
interface *interface_name*	Enters sub-command mode.
[no] ip ospf priority <0..255>	Sets the priority of the specified interface to the specified value. The no command sets the priority to 1.
[no] ip ospf cost <1..65535>	Sets the cost of the specified interface to the specified value. The no command sets the cost to 10.
no ip ospf authentication	Disables authentication for OSPF in the specified interface.
ip ospf authentication	Enables text authentication for OSPF in the specified interface.
ip ospf authentication message-digest	Enables MD5 authentication for OSPF in the specified interface.
ip ospf authentication same-as-area	Makes OSPF authentication in the specified interface follow the settings in the corresponding area.
[no] ip ospf authentication-key *password*	Sets the simple text password for OSPF text authentication in the specified interface. The no command clears the text password. *password*: 1-8 alphanumeric characters or underscores
ip ospf message-digest-key <1..255> md5 *password*	Sets the ID and password for OSPF MD5 authentication in the specified interface. *password*: 1-16 alphanumeric characters or underscores
no ip ospf message-digest-key	Clears the ID and password for OSPF MD5 authentication in the specified interface.

Table 19 interface Commands: OSPF Settings (continued)

COMMAND	DESCRIPTION
`[no] ip ospf hello-interval <1..65535>`	Sets the number of seconds between “hello” messages to peer routers. These messages let peer routers know the ZyWALL is available. The `no` command sets the number of seconds to 10. See `ip ospf dead-interval` for more information.
`[no] ip ospf dead-interval <1..65535>`	Sets the number of seconds the ZyWALL waits for “hello” messages from peer routers before it assumes the peer router is not available and deletes associated routing information. The `no` command sets the number of seconds to 40. See `ip ospf hello-interval` for more information.
`[no] ip ospf retransmit-interval <1..65535>`	Sets the number of seconds the ZyWALL waits for an acknowledgment to a link state announcement before it re-sends the link state announcement.

5.2.6 Basic Interface Setting Commands

This section identifies commands that support port grouping.

In CLI, representative interfaces are called representative ports.

Table 20 Basic Interface Setting Commands

COMMAND	DESCRIPTION
`show port-grouping`	Displays which physical ports are assigned to each representative interface.
`port-grouping ge<1..5> port <1..5>`	Adds the specified physical port to the specified representative interface.
`no port <1..5>`	Removes the specified physical port from its current representative interface and adds it to its default representative interface (port *x* --> ge*x*).
`port status Port<1..5>`	Enters a sub-command mode to configure the specified port’s settings.
`[no] duplex <full | half>`	Sets the port’s duplex mode. The no command returns the default setting.
`exit`	Leaves the sub-command mode.
`[no] negotiation auto`	Sets the port to use auto-negotiation to determine the port speed and duplex. The no command turns off auto-negotiation.
`[no] speed <100,10>`	Sets the Ethernet port’s connection speed in Mbps. The no command returns the default setting.
`show port setting`	Displays the Ethernet port negotation, duplex, and speed settings.
`show port status`	Displays statistics for the Ethernet ports.

5.2.6.1 Port Grouping Command Examples

The following commands add physical port 5 to representative interface ge1.

```
Router# configure terminal
Router(config)# show port-grouping
No. Representative Name  Port1 Port2 Port3 Port4 Port5
=========================================================
1   ge1                  yes   no    no    no    no
2   ge2                  no    yes   no    no    no
3   ge3                  no    no    yes   no    no
4   ge4                  no    no    no    yes   no
5   ge5                  no    no    no    no    yes
Router(config)# port-grouping ge1
Router(config-port-grouping)# port 5
Router(config-port-grouping)# exit
Router(config)# show port-grouping
No. Representative Name  Port1 Port2 Port3 Port4 Port5
=========================================================
1   ge1                  yes   no    no    no    yes
2   ge2                  no    yes   no    no    no
3   ge3                  no    no    yes   no    no
4   ge4                  no    no    no    yes   no
5   ge5                  no    no    no    no    no
```

The following commands set port 1 to use auto-negotiation auto and port 2 to use a 10 Mbps conenction speed and half duplex.

```
Router(config)# port status Port1
Router(config-port-status)# negotiation auto
Router(config-port-status)# exit
Router(config)# port status Port2
Router(config-port-status)# duplex half
Router(config-port-status)# speed 10
Router(config-port-status)# exit
Router(config)# exit
```

5.2.7 VLAN Interface Commands

This section identifies commands that support VLAN interfaces. VLAN interfaces also use many of the general interface commands discussed at the beginning of Section 5.2 on page 49.

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 21 Input Values for VLAN Interface Commands

LABEL	DESCRIPTION
interface_name	VLAN interface: vlan*x*, *x* = 0 - 31 Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model.

This table lists the VLAN interface commands.

Table 22 interface Commands: VLAN Interfaces

COMMAND	DESCRIPTION
`interface interface_name`	Creates the specified interface if necessary and enters sub-command mode.
`[no] port interface_name`	Specifies the Ethernet interface on which the VLAN interface runs. The `no` command clears the port.
`[no] vlan-id <1..4094>`	Specifies the VLAN ID used to identify the VLAN. The `no` command clears the VLAN ID.
`show port vlanid`	Displays the Ethernet interface VLAN settings.

5.2.7.1 VLAN Interface Command Examples

The following commands show you how to set up VLAN vlan100 with the following parameters: VLAN ID 100, interface ge1, IP 1.2.3.4, subnet 255.255.255.0, MTU 598, gateway 2.2.2.2, description "I am vlan100", upstream bandwidth 345, and downstream bandwidth 123.

```
Router# configure terminal
Router(config)# interface vlan100
Router(config-if-vlan)# vlan-id 100
Router(config-if-vlan)# port ge1
Router(config-if-vlan)# ip address 1.2.3.4 255.255.255.0
Router(config-if-vlan)# ip gateway 2.2.2.2
Router(config-if-vlan)# mtu 598
Router(config-if-vlan)# upstream 345
Router(config-if-vlan)# downstream 123
Router(config-if-vlan)# description I am vlan100
Router(config-if-vlan)# exit
```

5.2.8 Bridge Commands

This section identifies commands that support bridge interfaces. Bridge interfaces also use many of the general interface commands discussed at the beginning of Section 5.2 on page 49.

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 23 Input Values for Bridge Interface Commands

LABEL	DESCRIPTION
interface_name	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model. VLAN interface: vlan*x*, *x* = 0 - 31 bridge interface: br*x*, *x* = 0 - 11

This table lists the bridge interface commands.

Table 24 interface Commands: Bridge Interfaces

COMMAND	DESCRIPTION
`interface interface_name`	Creates the specified interface if necessary and enters sub-command mode.
`[no] join interface_name`	Adds the specified Ethernet interface or VLAN interface to the specified bridge. The no command removes the specified interface from the specified bridge.
`show bridge available member`	Displays the available interfaces that could be added to a bridge.

5.2.8.1 Bridge Interface Command Examples

The following commands show you how to set up a bridge interface named br0 with the following parameters: member ge1, IP 1.2.3.4, subnet 255.255.255.0, MTU 598, gateway 2.2.2.2, upstream bandwidth 345, downstream bandwidth 123, and description “I am br0”.

```
Router# configure terminal
Router(config)# interface br0
Router(config-if-brg)# join ge1
Router(config-if-brg)# ip address 1.2.3.4 255.255.255.0
Router(config-if-brg)# ip gateway 2.2.2.2
Router(config-if-brg)# mtu 598
Router(config-if-brg)# upstream 345
Router(config-if-brg)# downstream 123
Router(config-if-brg)# description I am br0
Router(config-if-brg)# exit
```

5.2.9 PPPoE/PPTP Commands

This section identifies commands that support PPPoE/PPTP interfaces. PPPoE/PPTP interfaces also use many of the general interface commands discussed at the beginning of Section 5.2 on page 49.

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 25 Input Values for PPPoE/PPTP Interface Commands

LABEL	DESCRIPTION
interface_name	The name of the interface. PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11
profile_name	The name of the ISP account. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

This table lists the PPPoE/PPTP interface commands.

Table 26 interface Commands: PPPoE/PPTP Interfaces

COMMAND	DESCRIPTION
`interface dial interface_name`	Connects the specified PPPoE/PPTP interface.
`interface disconnect interface_name`	Disconnects the specified PPPoE/PPTP interface.

Table 26 interface Commands: PPPoE/PPTP Interfaces (continued)

COMMAND	DESCRIPTION
`interface` *`interface_name`*	Creates the specified interface if necessary and enters sub-command mode.
`[no] connectivity {nail-up | dial-on-demand}`	Specifies whether the specified PPPoE/PPTP interface is always connected (nail-up) or connected only when used (dial-on-demand). The `no` command sets it to dial-on-demand.
`[no] account` *`profile_name`*	Specifies the ISP account for the specified PPPoE/PPTP interface. The `no` command clears the ISP account field.
`[no] bind` *`interface_name`*	Specifies the base interface for the PPPoE/PPTP interface. The `no` command removes the base interface.
`[no] local-address` *`ip`*	Specifies a static IP address for the specified PPPoE/PPTP interface. The `no` command makes the PPPoE/PPTP interface a DHCP client; the other computer assigns the IP address.
`[no] remote-address` *`ip`*	Specifies the IP address of the PPPoE/PPTP server. If the PPPoE/PPTP server is not available at this IP address, no connection is made. The `no` command lets the ZyWALL get the IP address of the PPPoE/PPTP server automatically when it establishes the connection.

5.2.9.1 PPPoE/PPTP Interface Command Examples

The following commands show you how to configure PPPoE/PPTP interface ppp0 with the following characteristics: base interface ge1, ISP account **Hinet**, local address 1.1.1.1, remote address 2.2.2.2, MTU 1200, upstream bandwidth 345, downstream bandwidth 123, description “I am ppp0”, and dialed only when used.

```
Router# configure terminal
Router(config)# interface ppp0
Router(config-if-ppp)# account Hinet
Router(config-if-ppp)# bind ge1
Router(config-if-ppp)# local-address 1.1.1.1
Router(config-if-ppp)# remote-address 2.2.2.2
Router(config-if-ppp)# mtu 1200
Router(config-if-ppp)# upstream 345
Router(config-if-ppp)# downstream 123
Router(config-if-ppp)# connectivity dial-on-demand
Router(config-if-ppp)# description I am ppp0
Router(config-if-ppp)# exit
```

The following commands show you how to connect and disconnect ppp0.

```
Router# interface dial ppp0
Router# interface disconnect ppp0
```

5.2.10 Auxiliary Interface Commands

The first table below lists the auxiliary `interface` commands, and the second table explains the values you can input with these commands.

Table 27 interface Commands: Auxiliary Interface

COMMAND	DESCRIPTION
`interface dial aux` `interface disconnect aux`	Dials or disconnects the auxiliary interface.
`interface aux`	Enters sub-command mode.
`[no] phone-number` *`phone`*	Specifies the phone number of the auxiliary interface. You can use 1-20 numbers, commas (,), or plus signs (+). Use a comma to pause during dialing. Use a plus sign to tell the external modem to make an international call. The `no` command clears the phone number.
`[no] dialing-type {tone | pulse}`	Specifies the dial type of the auxiliary interface. The `no` command sets the dial type to tone.
`[no] port-speed {9600 | 19200 | 38400 | 57600 | 115200}`	Specifies the baud rate of the auxiliary interface. The `no` command sets the baud rate to 115200.
`[no] initial-string` *`initial_string`*	Specifies the initial string of the auxiliary interface. The `no` command sets the initial string to “ATZ”. *`initial_string`*: You can use up to 64 characters. Semicolons (;) and backslashes (\) are not allowed.
`[no] dial-timeout <30..120>`	Specifies the number of seconds the auxiliary interface waits for an answer each time it tries to connect. The `no` command disables the timeout.
`[no] idle <0..360>`	Specifies the number of seconds the auxiliary interface waits for activity before it automatically disconnects. The `no` command disables the idle timeout.
`[no] username` *`username`*	Specifies the username of the auxiliary interface. The `no` command clears the username. *`username`*: You can use alphanumeric, underscores (_), dashes (-), and `/@$` characters, and it can be up to 30 characters long.
`[no] password` *`password`*	Specifies the password of the auxiliary interface. The `no` command clears the password. *`password`*: You can use up to 63 printable ASCII characters. Spaces are not allowed.
`[no] authentication {chap-pap | chap | pap | mschap | mschap-v2}`	Specifies the authentication type of the auxiliary interface. The `no` command sets the authentication to chap-pap.
`[no] description` *`description`*	Specifies the description for the auxiliary interface. The `no` command clears the description. *`description`*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`[no] shutdown`	Activates the auxiliary interface. The `no` command deactivates it.

5.2.10.1 Auxiliary Interface Command Examples

The following commands show you how to set up the auxiliary interface aux with the following parameters: phone-number 0340508888, tone dialing, port speed 115200, initial-string ATZ, timeout 10 seconds, retry count 2, retry interval 100 seconds, username **kk**, password kk@u2online, chap-pap authentication, and description “I am aux interface”.

```
Router# configure terminal
Router(config)# interface aux
Router(config-if-aux)# phone-number 0340508888
Router(config-if-aux)# dialing-type tone
Router(config-if-aux)# port-speed 115200
Router(config-if-aux)# initial-string ATZ
Router(config-if-aux)# timeout 10
Router(config-if-aux)# retry-count 2
Router(config-if-aux)# retry-interval 100
Router(config-if-aux)# username kk
Router(config-if-aux)# password kk@u2online
Router(config-if-aux)# authentication chap-pap
Router(config-if-aux)# description I am aux interface
Router(config-if-aux)# exit
```

The following commands show how to dial, disconnect, and stop the auxiliary interface.

```
Router# interface dial aux
Router# interface disconnect aux
```

5.2.11 Virtual Interface Commands

Virtual interfaces use many of the general interface commands discussed at the beginning of Section 5.2 on page 49. There are no additional commands for virtual interfaces.

5.2.11.1 Virtual Interface Command Examples

The following commands set up a virtual interface on top of Ethernet interface ge1. The virtual interface is named ge1:1 with the following parameters: IP 1.2.3.4, subnet 255.255.255.0, gateway 4.6.7.8, upstream bandwidth 345, downstream bandwidth 123, and description “I am vir interface”.

```
Router# configure terminal
Router(config)# interface ge1:1
Router(config-if-vir)# ip address 1.2.3.4 255.255.255.0
Router(config-if-vir)# ip gateway 4.6.7.8
Router(config-if-vir)# upstream 345
Router(config-if-vir)# downstream 123
Router(config-if-vir)# description I am vir interface
Router(config-if-vir)# exit
```

6

Trunks

This chapter shows you how to configure trunks on your ZyWALL.

6.1 Trunks Overview

You can group multiple interfaces together into trunks to have multiple connections share the traffic load to increase overall network throughput and enhance network reliability. If one interface’s connection goes down, the ZyWALL sends traffic through another member of the trunk. For example, you can use two interfaces for WAN connections. You can connect one interface to one ISP (or network) and connect the another to a second ISP (or network). The ZyWALL can balance the load between multiple connections. If one interface's connection goes down, the ZyWALL can automatically send its traffic through another interface.

You can use policy routing to specify through which interface to send specific traffic types. You can use trunks in combination with policy routing. You can also define multiple trunks for the same physical interfaces. This allows you to send specific traffic types through the interface that works best for that type of traffic, and if that interface’s connection goes down, the ZyWALL can still send its traffic through another interface.

6.2 Trunk Scenario Examples

Suppose one of the ZyWALL's interfaces is connected to an ISP that is also your Voice over IP (VoIP) service provider. You may want to set that interface as active and set another interface (connected to another ISP) to passive. This way VoIP traffic goes through the interface connected to the VoIP service provider whenever the interface’s connection is up.

Another example would be if you use multiple ISPs that provide different levels of service to different places. Suppose ISP A has better connections to Europe while ISP B has better connections to Australia. You could use policy routing and trunks to send traffic for your European branch offices primarily through ISP A and traffic for your Australian branch offices primarily through ISP B.

6.3 Trunk Commands Input Values

The following table explains the values you can input with the `interface-group` commands.

Table 28 interface-group Command Input Values

LABEL	DESCRIPTION
group_name	A descriptive name for the trunk. Use up to 31 characters (a-zA-Z0-9_-). The name cannot start with a number. This value is case-sensitive.
interface	The name of an interface, it could be an Ethernet, PPP, VLAN or bridge interface. The possible number of each interface type and the abbreviation to use are as follows. Ethernet interface: ge*x*, *x* = 1 - 5 ppp interface: pppx, x = 0-11 VLAN interface: vlan*x*, *x* = 0 - 31 bridge interface: br*x*, *x* = 0 - 11
num	The interface's position in the trunk's list of members <1..8>.
<CR>	Carriage Return (the "enter" key).

6.4 Trunk Commands Summary

The following table lists the `interface-group` commands. You must use the `configure terminal` command to enter the configuration mode before you can use these commands. See Table 28 on page 66 for details about the values you can input with these commands.

Table 29 interface-group Commands Summary

COMMAND	DESCRIPTION
`show interface-group {group_name}`	Displays a trunk's settings.
`[no] interface-group group_name`	Creates a trunk name and enters the trunk sub-command mode where you can configure the trunk. The `no` command removes the trunk.
`[no] interface {num | append | insert num} interface {<cr> | weight <1..10> | limit <1..1048576> | passive}`	This subcommand adds an interface to a trunk. Sets the interface's number. It also sets the interface's weight and spillover limit or sets it to be passive. The `no` command removes an interface from a trunk.
`mode {normal | trunk}`	Sets the mode for a trunk. Do this first in the trunk's sub-command mode.
`algorithm {wrr | llf | spill-over}`	Sets the trunk's load balancing algorithm.
`move <1..8> to <1..8>`	Changes a the interface order in a trunk.
`flush`	Deletes a trunk's interface settings.

6.5 Trunk Command Examples

The following example creates a weighted round robin trunk for Ethernet interfaces ge1 and ge2. The ZyWALL sends twice as much traffic through ge1.

```
Router# configure terminal
Router(config)# interface-group wrr-example
Router(if-group)# mode trunk
Router(if-group)# algorithm wrr
Router(if-group)# interface 1 ge1 weight 2
Router(if-group)# interface 2 ge2 weight 1
Router(if-group)# exit
Router(config)#
```

The following example creates a least load first trunk for Ethernet interface ge3 and VLAN 5. The ZyWALL sends new session traffic through the least utilized of these interfaces.

```
Router# configure terminal
Router(config)# interface-group llf-example
Router(if-group)# mode trunk
Router(if-group)# algorithm llf
Router(if-group)# interface 1 ge3
Router(if-group)# interface 2 vlan5
Router(if-group)# exit
Router(config)#
```

The following example creates a spill-over trunk for Ethernet interfaces ge1 and ge3. The ZyWALL sends traffic through ge1 until it hits the limit of 1000 kbps. The ZyWALL sends anything over 1000 kbps through ge3.

```
Router# configure terminal
Router(config)# interface-group spill-example
Router(if-group)# mode trunk
Router(if-group)# algorithm spill-over
Router(if-group)# interface 1 ge1 limit 1000
Router(if-group)# interface 2 ge3 limit 1000
Router(if-group)# exit
Router(config)#
```

7

Route

This chapter shows you how to configure policies for IP routing and static routes on your ZyWALL.

7.1 Policy Route

Traditionally, routing is based on the destination address only and the ZyWALL takes the shortest path to forward a packet. IP Policy Routing (IPPR) provides a mechanism to override the default routing behavior and alter the packet forwarding based on the policy defined by the network administrator. Policy-based routing is applied to incoming packets on a per interface basis, prior to the normal routing.

7.2 Policy Route Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 30 Input Values for General Policy Route Commands

LABEL	DESCRIPTION
address_object	The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
interface_name	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model. virtual interface on top of Ethernet interface: ge*x*:*y*, *x* = 1 - N, *y* = 1 - 12 VLAN interface: vlan*x*, *x* = 0 - 15 virtual interface on top of VLAN interface: vlan*x*:*y*, *x* = 0 - 15, *y* = 1 - 12 bridge interface: br*x*, *x* = 0 - 11 virtual interface on top of bridge interface: br*x*:*y*, *x* = 0 - 11, *y* = 1 - 12 PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11
schedule_object	The name of the schedule. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
service_name	The name of the service (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
user_name	The name of a user (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table describes the commands available for policy route. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 31 Command Summary: Policy Route

COMMAND	DESCRIPTION
`[no] bwm activate`	Globally enables bandwidth management. You must globally activate bandwidth management to have individual policy routes or application patrol policies apply bandwidth management. The no command globally disables bandwidth management.
`policy {<1..5000>|append<1..5000>|insert<1..5000>}`	Enters the policy-route sub-command mode to configure, add or insert a policy.
`[no] bandwidth <1..1048576> priority <1..1024> [maximize-bandwidth-usage]`	Sets the maximum bandwidth and priority for the policy. The no command removes bandwidth settings from the rule. You can also turn maximize bandwidth usage on or off.
`[no] deactivate`	Disables the specified policy. The no command enables the specified policy.
`[no] description` *description*	Sets a descriptive name for the policy. The no command removes the name for the policy.
`[no] destination {`*address_object*`|any}`	Sets the destination IP address the matched packets must have. The no command resets the destination IP address to the default (any). any means all IP addresses.
`[no] interface` *interface_name*	Sets the interface on which the incoming packets are received. The no command resets the incoming interface to the default (any). any means all interfaces.
`[no] next-hop {auto|gateway` *address object* `|interface` *interface_name* `|trunk` *trunk_name*`|tunnel` *tunnel_name*`}`	Sets the next-hop to which the matched packets are routed. The no command resets next-hop settings to the default (auto).
`[no] schedule` *schedule_object*	Sets the schedule. The no command removes the schedule setting to the default (none). none means any time.
`[no] service {`*service_name*`|any}`	Sets the IP protocol. The no command resets service settings to the default (any). any means all services.
`[no] snat {outgoing-interface|pool {`*address_object*`}}`	Sets the source IP address of the matched packets that use SNAT. The no command removes source NAT settings from the rule.
`[no] source {`*address_object*`|any}`	Sets the source IP address that the matched packets must have. The no command resets the source IP address to the default (any). any means all IP addresses.
`[no] sslvpn` *tunnel_name*	Sets the incoming interface to an SSL VPN tunnel. The no command removes the SSL VPN tunnel through which the incoming packets are received.
`[no] trigger <1..8> incoming` *service_name* `trigger` *service_name*	Sets a port triggering rule. The no command removes port trigger settings from the rule.
`trigger append incoming` *service_name* `trigger` *service_name*	Adds a new port triggering rule to the end of the list.

Table 31 Command Summary: Policy Route (continued)

COMMAND	DESCRIPTION
`trigger delete <1..8>`	Removes a port triggering rule.
`trigger insert <1..8> incoming service_name` `trigger service_name`	Adds a new port triggering rule before the specified number.
`trigger move <1..8> to <1..8>`	Moves a port triggering rule to the number that you specified.
`[no] tunnel tunnel_name`	Sets the incoming interface to an IPSec VPN tunnel. The no command removes the IPSec VPN tunnel through which the incoming packets are received.
`[no] user user_name`	Sets the user name. The no command resets the user name to the default (any). any means all users.
`policy default-route`	Enters the policy-route sub-command mode to set a route with the name “default-route”.
`policy delete <1..5000>`	Removes a routing policy.
`policy flush`	Clears the policy routing table.
`policy move <1..5000> to <1..5000>`	Move a routing policy to the number that you specified.
`show policy-route [1..5000]`	Displays all or specified policy route settings.
`show bwm activation`	Displays whether or not the global setting for bandwidth management on the ZyWALL is enabled.
`show bwm-usage < [policy-route <1..5000>] | [interface interface_name]`	Displays the specified policy route or interface’s bandwidth allotment, current bandwidth usage, and bandwidth usage statistics.

7.2.1 Policy Route Command Example

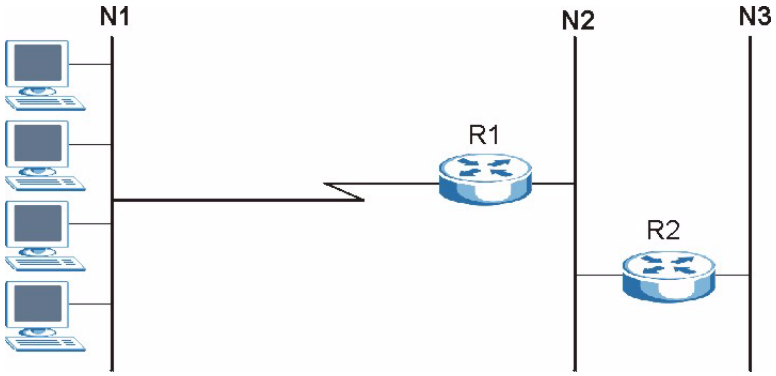
The following commands set a policy that routes the packets (with the source IP address TW_SUBNET and any destination IP address) through the interface ge1 to the next-hop router GW_1. This route uses the IP address of the outgoing interface as the matched packets' source IP address.

```
Router(config)# policy 1
Router(policy-route)# description example
Router(policy-route)# destination any
Router(policy-route)# interface ge1
Router(policy-route)# next-hop gateway GW_1
Router(policy-route)# snat outgoing-interface
Router(policy-route)# source TW_SUBNET
Router(policy-route)# exit
Router(config)# show policy-route 1
index: 1
  active: yes
  description: example
  user: any
  schedule: none
  interface: ge1
  tunnel: none
  source: TW_SUBNET
  destination: any
  service: any
  nexthop type: Gateway
  nexthop: GW_1
  bandwidth: 0
  bandwidth priority: 0
  SNAT: outgoing-interface
  amount of port trigger: 0
Router(config)#
```

7.3 IP Static Route

The ZyWALL has no knowledge of the networks beyond the network that is directly connected to the ZyWALL. For instance, the ZyWALL knows about network **N2** in the following figure through gateway **R1**. However, the ZyWALL is unable to route a packet to network **N3** because it doesn't know that there is a route through the same gateway **R1** (via gateway **R2**). The static routes are for you to tell the ZyWALL about the networks beyond the network connected to the ZyWALL directly.

Figure 14 Example of Static Routing Topology



7.4 Static Route Commands

The following table describes the commands available for static route. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 32 Command Summary: Static Route

COMMAND	DESCRIPTION
`[no] ip route {w.x.y.z} {w.x.y.z} {interface|w.x.y.z} <0..127>`	Sets a static route. The no command disables a static route.
`ip route replace {w.x.y.z} {w.x.y.z} {interface|w.x.y.z} <0..127> with {w.x.y.z} {w.x.y.z} {interface|w.x.y.z} <0..127>`	Changes an existing route's settings.
`show ip route-settings`	Displays static route information.

7.4.1 Static Route Commands Example

The following command sets a static route with IP address 10.10.10.1 and subnet mask 255.255.255.0 and with the next-hop interface ge1.

```
Router(config)# ip route 10.10.10.1 255.255.255.0 ge1
```

8

Routing Protocol

This chapter describes how to set up RIP and OSPF routing protocols for the ZyWALL.

8.1 Routing Protocol Overview

Routing protocols give the ZyWALL routing information about the network from other routers. The ZyWALL then stores this routing information in the routing table, which it uses when it makes routing decisions. In turn, the ZyWALL can also provide routing information via routing protocols to other routers.

The ZyWALL supports two standards, RIP and OSPF, for routing protocols. RIP and OSPF are compared in Table 33 on page 75, and they are discussed further in the next two sections.

Table 33 OSPF vs. RIP

	OSPF	RIP
Network Size	Large	Small (with up to 15 routers)
Metric	Bandwidth, hop count, throughput, round trip time and reliability.	Hop count
Convergence	Fast	Slow

8.2 Routing Protocol Commands Summary

The following table describes the values required for many routing protocol commands. Other values are discussed with the corresponding commands.

Table 34 Input Values for Routing Protocol Commands

LABEL	DESCRIPTION
ip	The 32-bit name of the area or virtual link in IP address format.
authkey	The password for text or MD5 authentication. You may use alphanumeric characters or underscores(_). text password: 1-8 characters long MD5 password: 1-16 characters long

The following sections list the routing protocol commands.

8.2.1 RIP Commands

This table lists the commands for RIP.

Table 35 router Commands: RIP

COMMAND	DESCRIPTION
`router rip`	Enters sub-command mode.
`[no] network` *`interface_name`*	Enables RIP on the specified Ethernet interface. The no command disables RIP on the specified interface.
`[no] redistribute {static | ospf}`	Enables redistribution of routing information learned from the specified source. The no command disables redistribution from the specified source.
`redistribute {static | ospf} metric <0..16>`	Sets the metric when redistributing routing information learned from the specified source.
`[no] version <1..2>`	Sets the default RIP version for all interfaces with RIP enabled. If the interface RIP version is blank, the interface uses the default version. This is not available in the GUI. The no command sets the default RIP version to 2.
`[no] passive-interface` *`interface_name`*	Sets the direction to “In-Only” for the specified interface. The no command sets the direction to bi-directional.
`[no] authentication mode {md5 | text}`	Sets the authentication mode for RIP. The no command sets the authentication mode to “none”.
`[no] authentication string` *`authkey`*	Sets the password for text authentication. The no command clears the password.
`authentication key <1..255> key-string` *`authkey`*	Sets the MD5 ID and password for MD5 authentication.
`no authentication key`	Clears the MD5 ID and password.
`[no] outonly-interface` *`interface_name`*	Sets the direction to “Out-Only” for the specified interface. The no command sets the direction to “BiDir”.

8.2.2 General OSPF Commands

This table lists the commands for general OSPF configuration.

Table 36 router Commands: General OSPF Configuration

COMMAND	DESCRIPTION
`router ospf`	Enters sub-command mode.
`[no] redistribute {static | rip}`	Enables redistribution of routing information learned from the specified non-OSPF source. The no command disables redistribution from the specified non-OSPF source.
`[no] redistribute {static | rip} metric-type <1..2> metric <0..16777214>`	Sets the metric for routing information learned from the specified non-OSPF source. The no command clears the metric.

Table 36 router Commands: General OSPF Configuration (continued)

COMMAND	DESCRIPTION
`[no] passive-interface interface_name`	Sets the direction to “In-Only” for the specified interface. The no command sets the direction to “BiDir”.
`[no] router-id IP`	Sets the 32-bit ID (in IP address format) of the ZyWALL. The no command resets it to “default”, or the highest available IP address.

8.2.3 OSPF Area Commands

This table lists the commands for OSPF areas.

Table 37 router Commands: OSPF Areas

COMMAND	DESCRIPTION
`router ospf`	Enters sub-command mode.
`[no] network interface area IP`	Adds the specified interface to the specified area. The no command removes the specified interface from the specified area.
`[no] area IP [{stub | nssa}]`	Creates the specified area and sets it to the indicated type. The no command removes the area.
`[no] area IP authentication`	Enables text authentication in the specified area. The no command disables authentication in the specified area.
`[no] area IP authentication message-digest`	Enables MD5 authentication in the specified area. The no command disables authentication in the specified area.
`[no] area IP authentication authentication-key authkey`	Sets the password for text authentication in the specified area. The no command clears the password.
`[no] area IP authentication message-digest-key <1..255> md5 authkey`	Sets the MD5 ID and password for MD5 authentication in the specified area. The no command clears the MD5 ID and password.

8.2.4 Virtual Link Commands

This table lists the commands for virtual links in OSPF areas.

Table 38 router Commands: Virtual Links in OSPF Areas

COMMAND	DESCRIPTION
`show ospf area IP virtual-link`	Displays information about virtual links for the specified area.
`router ospf`	
`[no] area IP virtual-link IP`	Creates the specified virtual link in the specified area. The no command removes the specified virtual link.
`[no] area IP virtual-link IP authentication`	Enables text authentication in the specified virtual link. The no command disables authentication in the specified virtual link.

Table 38 router Commands: Virtual Links in OSPF Areas (continued)

COMMAND	DESCRIPTION
[no] area IP virtual-link IP authentication message-digest	Enables MD5 authentication in the specified virtual link. The no command disables authentication in the specified virtual link.
[no] area IP virtual-link IP authentication authentication-key *authkey*	Sets the password for text authentication in the specified virtual link. The no command clears the password in the specified virtual link.
[no] area IP virtual-link IP authentication message-digest-key <1..255> md5 *authkey*	Sets the MD5 ID and password for MD5 authentication in the specified virtual link. The no command clears the MD5 ID and password in the specified virtual link.
[no] area IP virtual-link IP authentication same-as-area	Sets the virtual link's authentication method to the area's default authentication.
[no] area IP virtual-link IP authentication-key *authkey*	Sets the password for text authentication in the specified virtual link. The no command clears the password.
area IP virtual-link IP message-digest-key <1..255> md5 *authkey*	Sets the MD5 ID and password for MD5 authentication in the specified virtual link.
no area IP virtual-link IP message-digest-key <1..255>	Clears the MD5 ID in the specified virtual link.

8.2.5 Learned Routing Information Commands

This table lists the commands to look at learned routing information.

Table 39 ip route Commands: Learned Routing Information

COMMAND	DESCRIPTION
show ip route [kernel | connected | static | ospf | rip | bgp]	Displays learned routing and other routing information.

9

Zones

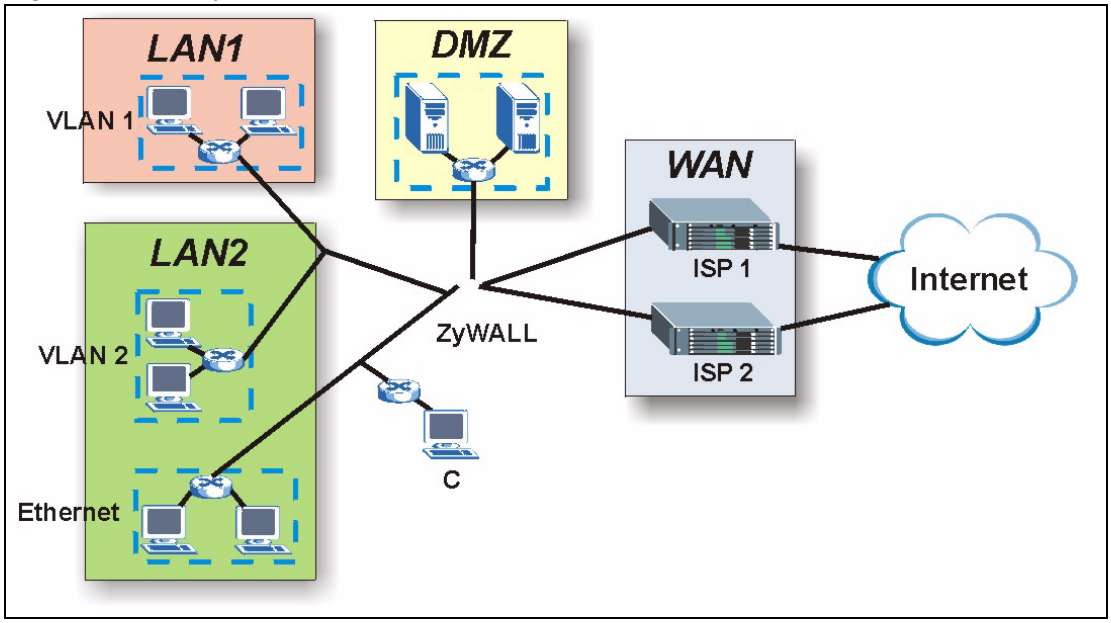
Set up zones to configure network security and network policies in the ZyWALL.

9.1 Zones Overview

A zone is a group of interfaces and VPN tunnels. The ZyWALL uses zones, not interfaces, in many security and policy settings, such as firewall rules and remote management.

Zones cannot overlap. Each Ethernet interface, VLAN interface, bridge interface, PPPoE/PPTP interface, auxiliary interface, and VPN tunnel can be assigned to at most one zone. Virtual interfaces are automatically assigned to the same zone as the interface on which they run.

Figure 15 Example: Zones



9.2 Zone Commands Summary

The following table describes the values required for many zone commands. Other values are discussed with the corresponding commands.s

Table 40 Input Values for Zone Commands

LABEL	DESCRIPTION
profile_name	The name of a zone, or the name of a VPN tunnel. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

This table lists the zone commands.

Table 41 zone Commands

COMMAND	DESCRIPTION
`show zone [`*profile_name*`]`	Displays information about the specified zone or about all zones.
`[no] zone` *profile_name*	Creates the zone if necessary and enters sub-command mode. The no command deletes the zone.
`zone` *profile_name*	
`[no] block`	Blocks intra-zone traffic. The no command allows intra-zone traffic.
`[no] interface` *interface_name*	Adds the specified interface to the specified zone. The no command removes the specified interface from the specified zone. See Section 5.2 on page 49 for information about interface names.
`[no] crypto` *profile_name*	Adds the specified IPSec VPN tunnel to the specified zone. The no command removes the specified IPSec VPN tunnel from the specified zone.
`[no] sslvpn` *profile_name*	Adds the specified SSL VPN tunnel to the specified zone. The no command removes the specified SSL VPN tunnel from the specified zone.

9.2.1 Zone Command Examples

The following commands add Ethernet interfaces ge1 and ge2 to zone A and block intra-zone traffic.

```
Router# configure terminal
Router(config)# zone A
Router(zone)# interface ge1
Router(zone)# interface ge2
Router(zone)# block
Router(zone)# exit
Router(config)# show zone
No. Name                            Block  Member
==========================================================================
1   A                                 yes    ge1,ge2
Router(config)# show zone A
blocking intra-zone traffic: yes
No. Type                            Member
==========================================================================
1   interface                       ge1
2   interface                       ge2
```

10

DDNS

This chapter describes how to configure dynamic DNS (DDNS) services for the ZyWALL.

10.1 DDNS Overview

DNS maps a domain name to a corresponding IP address and vice versa. Similarly, dynamic DNS maps a domain name to a dynamic IP address. As a result, anyone can use the domain name to contact you (in NetMeeting, CU-SeeMe, etc.) or to access your FTP server or Web site, regardless of the current IP address.

If you have a private WAN IP address, then you cannot use Dynamic DNS.

Before you can use Dynamic DNS services with the ZyWALL, you first need to set up a dynamic DNS account with www.dyndns.org. (This is the only DNS service provider the ZyWALL supports at the time of writing.) DynDNS offers several DNS services. Please see www. dyndns.org for more information about each of them. When registration is complete, DynDNS gives you a password or key.

You must go to DynDNS's Web site to set up a user account and a domain name before you can use the Dynamic DNS service with the ZyWALL.

After this, you configure the ZyWALL. Once the ZyWALL is configured, it automatically sends updated IP addresses to DynDNS, which helps redirect traffic accordingly.

10.2 DDNS Commands Summary

The following table describes the values required for many DDNS commands. Other values are discussed with the corresponding commands.

Table 42 Input Values for DDNS Commands

LABEL	DESCRIPTION
profile_name	The name of the DDNS profile. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table lists the DDNS commands.

Table 43 ip ddns Commands

COMMAND	DESCRIPTION
`show ddns [profile_name]`	Displays information about the specified DDNS profile or about all DDNS profiles.
`[no] ip ddns profile profile_name`	Creates the specified DDNS profile if necessary and enters sub-command mode. The no command deletes it.
`[no] service-type {dyndns | dyndns_static | dyndns_custom}`	Sets the service type in the specified DDNS profile. The no command clears it.
`[no] username username password password`	Sets the username and password in the specified DDNS profile. The no command clears these fields. *username*: You can use up to 31 alphanumeric characters and the underscore (_). *password*: You can use up to 64 alphanumeric characters and the underscore (_).
`[no] host hostname`	Sets the domain name in the specified DDNS profile. The no command clears the domain name. *hostname*: You may up to 254 alphanumeric characters, dashes (-), or periods (.), but the first character must be alphanumeric.
`[no] ip-select {iface | auto | custom}`	Sets the IP address update policy in the specified DDNS profile. The no command clears the policy.
`[no] custom IP`	Sets the static IP address in the specified DDNS profile. The no command clears it.
`[no] mx {ip | domain_name}`	Enables the mail exchanger and sets the fully-qualified domain name of the mail server to which mail from this domain name is forwarded. The no command disables the mail exchanger. *domain_name*: You may up to 254 alphanumeric characters, dashes (-), or periods (.), but the first character must be alphanumeric.
`[no] wan-iface interface_name`	Sets the WAN interface in the specified DDNS profile. The no command clears it.
`[no] ha-iface interface_name`	Sets the HA interface in the specified DDNS profile. The no command clears it.
`[no] backmx`	Enables the backup mail exchanger. The no command disables it.
`[no] wildcard`	Enables the wildcard feature. The no command disables it.

11

Virtual Servers

This chapter describes how to set up, manage, and remove virtual servers.

11.1 Virtual Server Overview

Virtual server is also known as port forwarding or port translation.

Virtual servers are computers on a private network behind the ZyWALL that you want to make available outside the private network. If the ZyWALL has only one public IP address, you can make the computers in the private network available by using ports to forward packets to the appropriate private IP address.

11.2 Virtual Server Commands Summary

The following table describes the values required for many virtual server commands. Other values are discussed with the corresponding commands.

Table 44 Input Values for Virtual Server Commands

LABEL	DESCRIPTION
profile_name	The name of the virtual server. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table lists the virtual server commands.

Table 45 ip virtual-server Commands

COMMAND	DESCRIPTION
`show ip virtual-server [`*profile_name*`]`	Displays information about the specified virtual server or about all the virtual servers.
`no ip virtual-server` *profile_name*	Deletes the specified virtual server.
`ip virtual-server` *profile_name* `interface` *interface_name* `original-ip {any | IP |` *address_object*`} map-to IP map-type any [deactivate]`	Creates or modifies the specified virtual server and maps the specified destination IP address (for all destination ports) to the specified destination IP address. The original destination IP is defined by the specified interface (any), the specified IP address (IP), or the specified address object (*address-object*).

Table 45 ip virtual-server Commands (continued)

COMMAND	DESCRIPTION
ip virtual-server *profile_name* interface *interface_name* original-ip {any | IP | *address_object*} map-to IP map-type port protocol {any | tcp | udp} original-port <1..65535> mapped-port <1..65535> [deactivate]	Creates or modifies the specified virtual port and maps the specified (destination IP address, protocol, and destination port) to the specified (destination IP address and destination port). The original destination IP is defined by the specified interface (any), the specified IP address (IP), or the specified address object (*address-object*).
ip virtual-server *profile_name* interface *interface_name* original-ip {any | IP | *address_object*} map-to IP map-type ports protocol {any | tcp | udp} original-port-begin <1..65535> original-port-end <1..65535> mapped-port-begin <1..65535> [deactivate]	Creates or modifies the specified virtual port and maps the specified (destination IP address, protocol, and range of destination ports) to the specified (destination IP address and range of destination ports). The original destination IP is defined by the specified interface (any), the specified IP address (IP), or the specified address object (*address-object*).
ip virtual-server {activate | deactivate} *profile_name*	Activates or deactivates the specified virtual server.
ip virtual-server rename *profile_name* *profile_name*	Renames the specified virtual server from the first *profile_name* to the second *profile_name*.

11.2.1 Virtual Server Command Examples

The following command shows information about all the virtual servers in the ZyWALL.

```
Router# configure terminal
Router(config)# show ip virtual-server
virtual server: VR1
  active: yes
  interface: ge1
  original IP: any, mapped IP: 192.168.3.2
  mapping type: any, protocol type: any
  original start port: none, original end port: none
  mapped start port: none, mapped end port: none
```

The following command creates virtual server VR1 on interface ge1 that maps ge1 IP addresses to 192.168.3.2.

```
Router# configure terminal
Router(config)# ip virtual-server VR1 interface ge1 original-ip any map-to
192.168.3.2 map-type any
```

12

HTTP Redirect

This chapter shows you how to configure HTTP redirection on your ZyWALL.

12.1 HTTP Redirect Overview

HTTP redirect forwards the client's HTTP request (except HTTP traffic destined for the ZyWALL) to a web proxy server.

12.1.1 Web Proxy Server

A proxy server helps client devices make indirect requests to access the Internet or outside network resources/services. A proxy server can act as a firewall or an ALG (application layer gateway) between the private network and the Internet or other networks. It also keeps hackers from knowing internal IP addresses.

12.2 HTTP Redirect Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 46 Input Values for HTTP Redirect Commands

LABEL	DESCRIPTION
description	The name to identify the rule. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
interface_name	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model. virtual interface on top of Ethernet interface: ge*x*:*y*, *x* = 1 - N, *y* = 1 - 12 VLAN interface: vlan*x*, *x* = 0 - 15 virtual interface on top of VLAN interface: vlan*x*:*y*, *x* = 0 - 15, *y* = 1 - 12 bridge interface: br*x*, *x* = 0 - 11 virtual interface on top of bridge interface: br*x*:*y*, *x* = 0 - 11, *y* = 1 - 12 PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11

The following table describes the commands available for HTTP redirection. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 47 Command Summary: HTTP Redirect

COMMAND	DESCRIPTION
`ip http-redirect` *`description`* `interface` *`interface_name`* `redirect-to` *`w.x.y.z`* `<1..65535>`	Sets a HTTP redirect rule.
`ip http-redirect` *`description`* `interface` *`interface_name`* `redirect-to` *`w.x.y.z`* `<1..65535> deactivate`	Disables a HTTP redirect rule.
`ip http-redirect activate` *`description`*	Enables a rule with the specified rule name.
`ip http-redirect deactivate` *`description`*	Disables a rule with the specified rule name.
`no ip http-redirect` *`description`*	Removes a rule with the specified rule name.
`ip http-redirect flush`	Clears all HTTP redirect rules.
`show ip http-redirect [`*`description`*`]`	Displays HTTP redirect settings.

12.2.1 HTTP Redirect Command Examples

The following commands create a HTTP redirect rule, disable it and display the settings.

```
Router# configure terminal
Router(config)# ip http-redirect example1 interface ge1 redirect-to
10.10.2.3 80
Router(config)# ip http-redirect example1 interface ge1 redirect-to
10.10.2.3 80 deactivate
Router(config)# show ip http-redirect
Name                            Interface    Proxy Server    Port    Active
==========================================================================
example1                         ge1          10.10.2.3       80      no
```

13

ALG

This chapter covers how to use the ZyWALL's ALG feature to allow certain applications to pass through the ZyWALL.

13.1 ALG Introduction

The ZyWALL can function as an Application Layer Gateway (ALG) to allow certain NAT un-friendly applications (such as SIP) to operate properly through the ZyWALL's NAT.

Some applications cannot operate through NAT (are NAT un-friendly) because they embed IP addresses and port numbers in their packets' data payload. The ZyWALL examines and uses IP address and port number information embedded in the VoIP traffic's data stream. When a device behind the ZyWALL uses an application for which the ZyWALL has VoIP pass through enabled, the ZyWALL translates the device's private IP address inside the data stream to a public IP address. It also records session port numbers and allows the related sessions to go through the firewall so the application's traffic can come in from the WAN to the LAN.

The ZyWALL only needs to use the ALG feature for traffic that goes through the ZyWALL's NAT. The firewall allows related sessions for VoIP applications that register with a server. The firewall allows or blocks peer to peer VoIP traffic based on the firewall rules.

You do not need to use STUN (Simple Traversal of User Datagram Protocol (UDP) through Network Address Translators) for VoIP devices behind the ZyWALL when you enable the SIP ALG.

13.2 ALG Commands

The following table lists the `alg` commands. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 48 alg Commands

COMMAND	DESCRIPTION
`[no] alg sip [ (signal-port <1025..65535>) |(signal-extra-port <1025..65535>) | (media-timeout <1..86400>) | (signal-timeout <1..86400>) ]`	Turns on or configures the ALG. Use `signal-port` with a listening port number (1025 to 65535) if you are using SIP on a port other than UDP 5060. Use `signal-extra-port` with a listening port number (1025 to 65535) if you are also using SIP on an additional UDP port number, enter it here. Use `media-timeout` and a number of seconds (1~86400) for how long to allow a voice session to remain idle (without voice traffic) before dropping it. Use `signal-timeout` and a number of seconds (1~86400) for how long to allow a SIP signaling session to remain idle (without SIP packets) before dropping it. The `no` command turns off the SIP ALG or removes the settings that you specify.
`[no] alg <h323 | ftp> [ (signal-port <1025..65535>) |(signal-extra-port <1025..65535>) ]`	Turns on or configures the H.323 or FTP ALG. Use `signal-port` with a listening port number (1025 to 65535) if you are using H.323 on a TCP port other than 1720 or FTP on a TCP port other than 21. Use `signal-extra-port` with a listening port number (1025 to 65535) if you are also using H.323 or FTP on an additional TCP port number, enter it here. The `no` command turns off the H.323 or FTP ALG or removes the settings that you specify.
`show alg <sip | h323 | ftp>`	Displays the specified ALG's configuration.

13.3 ALG Commands Example

The following example turns on pass through for SIP and turns it off for H.323.

```
Router# configure terminal
Router(config)# alg sip
Router(config)# no alg h323
```

PART III
Firewall and VPN

Firewall (93)
IPSec VPN (99)
SSL VPN (107)
L2TP VPN (111)

14

Firewall

This chapter introduces the ZyWALL's firewall and shows you how to configure your ZyWALL's firewall.

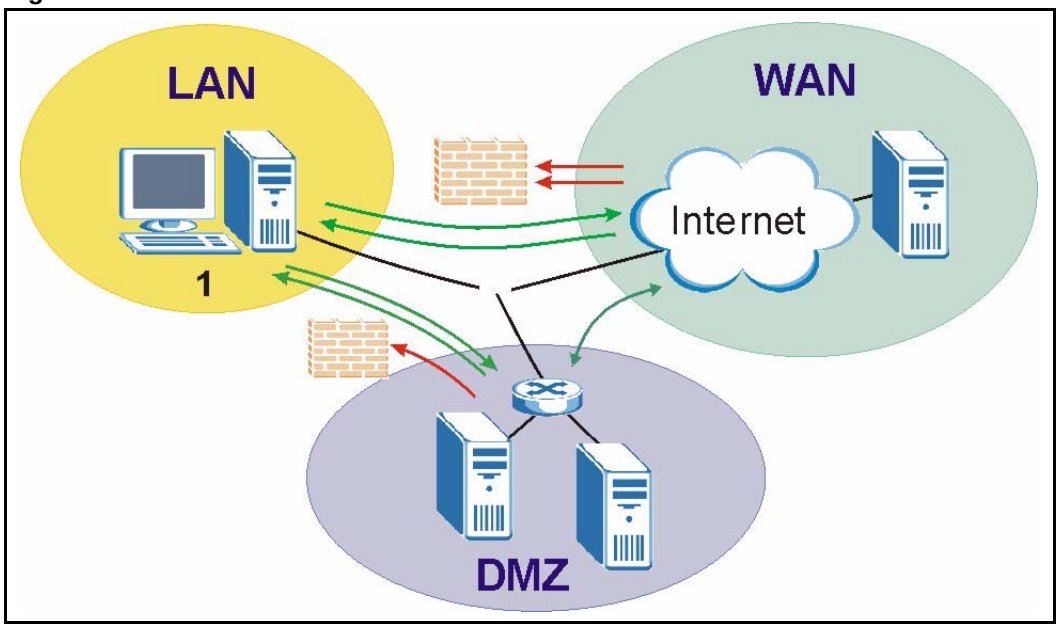
14.1 Firewall Overview

The ZyWALL's firewall is a stateful inspection firewall. The ZyWALL restricts access by screening data packets against defined access rules. It can also inspect sessions. For example, traffic from one zone is not allowed unless it is initiated by a computer in another zone first.

A zone is a group of interfaces or VPN tunnels. Group the ZyWALL's interfaces into different zones based on your needs. You can configure firewall rules for data passing between zones or even between interfaces and/or VPN tunnels in a zone.

The following figure shows the ZyWALL's default firewall rules in action as well as demonstrates how stateful inspection works. User **1** can initiate a Telnet session from within the LAN zone and responses to this request are allowed. However, other Telnet traffic initiated from the WAN or DMZ zone and destined for the LAN zone is blocked. Communications between the WAN and the DMZ zones are allowed. The firewall allows VPN traffic between any of the networks.

Figure 16 Default Firewall Action



Your customized rules take precedence and override the ZyWALL's default settings. The ZyWALL checks the schedule, user name (user's login name on the ZyWALL), source IP address, destination IP address and IP protocol type of network traffic against the firewall rules (in the order you list them). When the traffic matches a rule, the ZyWALL takes the action specified in the rule.

For example, if you want to allow a specific user from any computer to access one zone by logging in to the ZyWALL, you can set up a rule based on the user name only. If you also apply a schedule to the firewall rule, the user can only access the network at the scheduled time. A user-aware firewall rule is activated whenever the user logs in to the ZyWALL and will be disabled after the user logs out of the ZyWALL.

14.2 Firewall Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 49 Input Values for General Firewall Commands

LABEL	DESCRIPTION
address_object	The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
user_name	The name of a user (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
zone_object	The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
schedule_object	The name of the schedule. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
service_name	The name of the service (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table describes the commands available for the firewall. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 50 Command Summary: Firewall

COMMAND	DESCRIPTION
`[no] connlimit max-per-host <1..8192>`	Sets he highest number of sessions that the ZyWALL will permit a host to have at one time. The `no` command removes the settings.
`firewall <1..5000>`	Enters the firewall sub-command mode to set a firewall rule. `<1..5000>`: the priority number of a firewall rule.
`action <allow|deny|reject>`	Sets the action the ZyWALL takes when packets match this rule.
`[no] activate`	Enables a firewall rule. The `no` command disables the firewall rule.

Table 50 Command Summary: Firewall (continued)

COMMAND	DESCRIPTION
[no] description *description*	Sets a descriptive name (up to 60 printable ASCII characters) for a firewall rule. The no command removes the descriptive name from the rule.
[no] destinationip *address_object*	Sets the destination IP address. The no command resets the destination IP address(es) to the default (any). any means all IP addresses.
exit	Quits the firewall sub-command mode.
[no] from *zone_object*	Sets the zone on which the packets are received. The no command removes the zone on which the packets are received and resets it to the default (any). any means all interfaces or VPN tunnels.
[no] log [alert]	Sets the ZyWALL to create a log (and optionally an alert) when packets match this rule. The no command sets the ZyWALL not to create a log or alert when packets match this rule.
[no] schedule *schedule_object*	Sets the schedule that the rule uses. The no command removes the schedule settings from the rule.
[no] service *service_name*	Sets the service to which the rule applies. The no command resets the service settings to the default (any). any means all services.
[no] sourceip *address_object*	Sets the source IP address(es). The no command resets the source IP address(es) to the default (any). any means all IP addresses.
[no] sourceport {tcp|udp} {eq <1..65535>|range <1..65535> <1..65535>}	Sets the source port for a firewall rule. The no command removes the source port from the rule.
[no] to {*zone_object*|ZyWALL}	Sets the zone to which the packets are sent. The no command removes the zone to which the packets are sent and resets it to the default (any). any means all interfaces or VPN tunnels.
[no] user *user_name*	Sets a user-aware firewall rule. The rule is activated only when the specified user logs into the system. The no command resets the user name to the default (any). any means all users.
firewall *zone_object* {*zone_object*|ZyWALL} <1..5000>	Enters the firewall sub-command mode to set a direction specific through-ZyWALL rule or to-ZyWALL rule. <1..5000>: the index number in a direction specific firewall rule list.
firewall *zone_object* {*zone_object*|ZyWALL} append	Enters the firewall sub-command mode to add a direction specific through-ZyWALL rule or to-ZyWALL rule to the end of the global rule list.

Table 50 Command Summary: Firewall (continued)

COMMAND	DESCRIPTION
`firewall zone_object {zone_object|ZyWALL} delete <1..5000>`	Removes a direction specific through-ZyWALL rule or to-ZyWALL rule. <1..5000>: the index number in a direction specific firewall rule list.
`firewall zone_object {zone_object|ZyWALL} flush`	Removes all direction specific through-ZyWALL rule or to-ZyWALL rules.
`firewall zone_object {zone_object|ZyWALL} insert <1..5000>`	Enters the firewall sub-command mode to add a direction specific through-ZyWALL rule or to-ZyWALL rule before the specified rule number. <1..5000>: the index number in a direction specific firewall rule list.
`firewall zone_object {zone_object|ZyWALL} move <1..5000> to <1..5000>`	Moves a direction specific through-ZyWALL rule or to-ZyWALL rule to the number that you specified. <1..5000>: the index number in a direction specific firewall rule list.
`[no] firewall activate`	Enables the firewall on the ZyWALL. The no command disables the firewall.
`firewall append`	Enters the firewall sub-command mode to add a global firewall rule to the end of the global rule list.
`firewall delete <1..5000>`	Removes a firewall rule. <1..5000>: the priority number of a firewall rule.
`firewall flush`	Removes all firewall rules.
`firewall insert <1..5000>`	Enters the firewall sub-command mode to add a firewall rule before the specified rule number. <1..5000>: the priority number of a firewall rule.
`firewall move <1..5000> to <1..5000>`	Moves a firewall rule to the number that you specified. <1..5000>: the priority number of a firewall rule.
`show connlimit max-per-host`	Displays the highest number of sessions that the ZyWALL will permit a host to have at one time.
`show firewall`	Displays all firewall settings.
`show firewall <1..5000>`	Displays a firewall rule's settings. <1..5000>: the priority number of a firewall rule.
`show firewall zone_object {zone_object|ZyWALL}`	Displays all firewall rules settings for the specified packet direction.
`show firewall zone_object {zone_object|ZyWALL} <1..5000>`	Displays a specified firewall rule's settings for the specified packet direction. <1..5000>: the index number in a direction specific firewall rule list.
`show firewall status`	Displays whether the firewall is active or not.

14.2.1 Firewall Command Examples

The following example shows you how to add a firewall rule to allow a MyService connection from the WAN zone to the IP addresses Dest_1 in the LAN zone.

- Enter configuration command mode.
- Create an IP address object.
- Create a service object.
- Enter the firewall sub-command mode to add a firewall rule.
- Set the direction of travel of packets to which the rule applies.
- Set the destination IP address(es).
- Set the service to which this rule applies.
- Set the action the ZyWALL is to take on packets which match this rule.

```
Router# configure terminal
Router(config)# service-object MyService tcp eq 1234
Router(config)# address-object Dest_1 10.0.0.10-10.0.0.15
Router(config)# firewall insert 3
Router(firewall)# from WAN
Router(firewall)# to LAN
Router(firewall)# destinationip Dest_1
Router(firewall)# service MyService
Router(firewall)# action allow
```

The following command displays the firewall rule(s) (including the default firewall rule) that applies to the packet direction from WAN to LAN. The firewall rule numbers in the menu are the firewall rules' priority numbers in the global rule list.

```
Router# configure terminal
Router(config)# show firewall WAN LAN
firewall rule: 3
  description:
  user: any, schedule: none
  from: WAN, to: LAN
  source IP: any, source port: any
  destination IP: Dest_1, service: MyService
  log: no, action: allow, status: yes
firewall rule: 4
  description:
  user: any, schedule: none
  from: WAN, to: LAN
  source IP: any, source port: any
  destination IP: any, service: any
  log: log, action: deny, status: yes

Router(config)# show firewall WAN LAN 2
firewall rule: 4
  description:
  user: any, schedule: none
  from: WAN, to: LAN
  source IP: any, source port: any
  destination IP: any, service: any
  log: no, action: deny, status: yes
Router(config)#
```

15

IPSec VPN

This chapter explains how to set up and maintain IPSec VPNs in the ZyWALL.

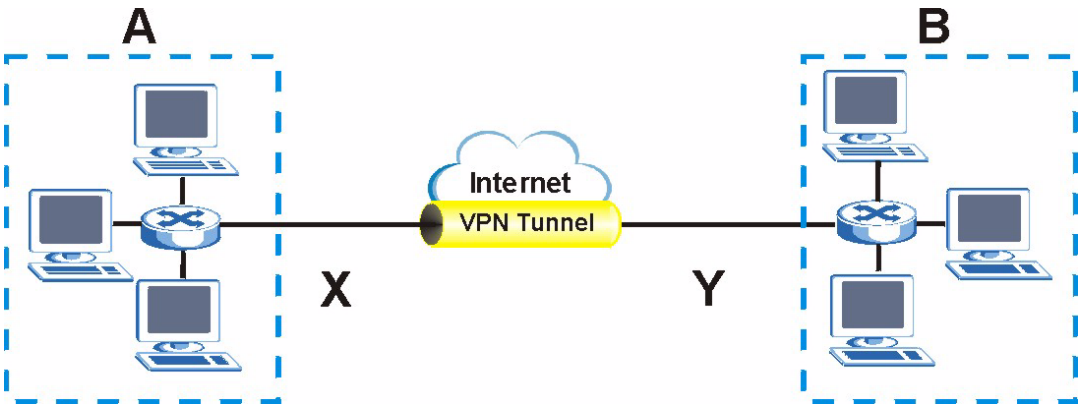
15.1 IPSec VPN Overview

A virtual private network (VPN) provides secure communications between sites without the expense of leased site-to-site lines. A secure VPN is a combination of tunneling, encryption, authentication, access control and auditing. It is used to transport traffic over the Internet or any insecure network that uses TCP/IP for communication.

Internet Protocol Security (IPSec) is a standards-based VPN that offers flexible solutions for secure data communications across a public network like the Internet. IPSec is built around a number of standardized cryptographic techniques to provide confidentiality, data integrity and authentication at the IP layer.

The following figure is one example of a VPN tunnel.

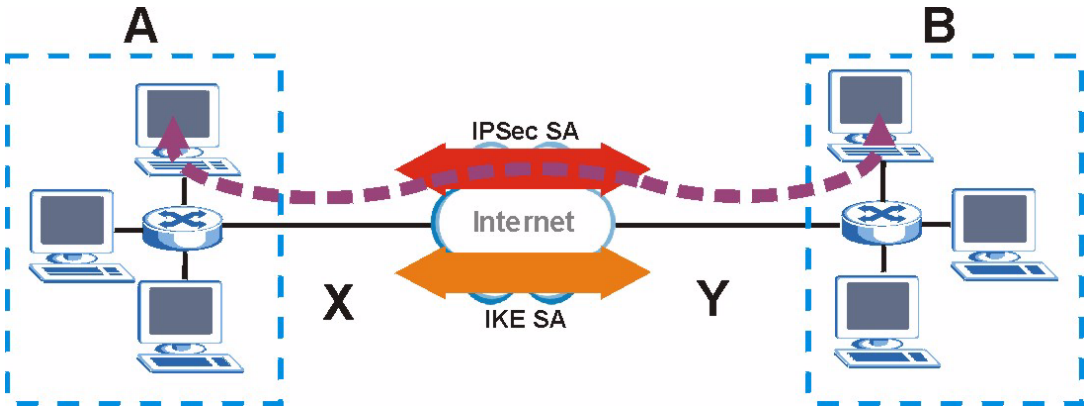
Figure 17 VPN: Example



The VPN tunnel connects the ZyWALL (**X**) and the remote IPSec router (**Y**). These routers then connect the local network (**A**) and remote network (**B**).

A VPN tunnel is usually established in two phases. Each phase establishes a security association (SA), a contract indicating what security parameters the ZyWALL and the remote IPSec router will use. The first phase establishes an Internet Key Exchange (IKE) SA between the ZyWALL and remote IPSec router. The second phase uses the IKE SA to securely establish an IPSec SA through which the ZyWALL and remote IPSec router can send data between computers on the local network and remote network. This is illustrated in the following figure.

Figure 18 VPN: IKE SA and IPSec SA



In this example, a computer in network **A** is exchanging data with a computer in network **B**. Inside networks **A** and **B**, the data is transmitted the same way data is normally transmitted in the networks. Between routers **X** and **Y**, the data is protected by tunneling, encryption, authentication, and other security features of the IPSec SA. The IPSec SA is secure because routers **X** and **Y** established the IKE SA first.

15.2 IPSec VPN Commands Summary

The following table describes the values required for many IPSec VPN commands. Other values are discussed with the corresponding commands.

Table 51 Input Values for IPSec VPN Commands

LABEL	DESCRIPTION
profile_name	The name of a VPN concentrator. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
policy_name	The name of an IKE SA. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
map_name	The name of an IPSec SA. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
domain_name	Fully-qualified domain name. You may use up to 254 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period.
e_mail	An e-mail address. You can use up to 63 alphanumeric characters, underscores (_), dashes (-), or @ characters.

Table 51 Input Values for IPSec VPN Commands (continued)

LABEL	DESCRIPTION
distinguished_name	A domain name. You can use up to 511 alphanumeric, characters, spaces, or .@=,_- characters.
sort_order	Sort the list of currently connected SAs by one of the following classifications. algorithm inbound outbound timeout encapsulation name policy

The following sections list the IPSec VPN commands.

15.2.1 IKE SA Commands

This table lists the commands for IKE SAs (VPN gateways).

Table 52 isakmp Commands: IKE SAs

COMMAND	DESCRIPTION
show isakmp keepalive	Displays the Dead Peer Detection period.
show isakmp policy [*policy_name*]	Shows the specified IKE SA or all IKE SAs.
isakmp keepalive <2..60>	Sets the Dead Peer Detection period.
[no] isakmp policy *policy_name*	Creates the specified IKE SA if necessary and enters sub-command mode. The no command deletes the specified IKE SA.
isakmp policy rename *policy_name policy_name*	Renames the specified IKE SA (first *policy_name*) to the specified name (second *policy_name*).
isakmp policy *policy_name*	
activate deactivate	Activates or deactivates the specified IKE SA.
mode {main | aggressive}	Sets the negotiating mode.
transform-set isakmp-algo [isakmp_algo [isakmp_algo]]	Sets the encryption and authentication algorithms for each proposal. ISAKMP_ALGO: {des-md5 | des-sha | 3des-md5 | 3des-sha | aes128-md5 | aes128-sha | aes192-md5 | aes192-sha | aes256-md5 | aes256-sha}
lifetime <180..3000000>	Sets the IKE SA life time to the specified value.
group1 group2 group5	Sets the DH*x* group to the specified group.
[no] natt	Enables NAT traversal. The no command disables NAT traversal.
[no] dpd	Enables Dead Peer Detection (DPD). The no command disables DPD.
local-ip {ip {*ip* | *domain_name*} | interface *interface_name*}	Sets the local gateway address to the specified IP address, domain name, or interface.

Table 52 isakmp Commands: IKE SAs (continued)

COMMAND	DESCRIPTION
peer-ip {*ip* | *domain_name*} [*ip* | *domain_name*]	Sets the remote gateway address(es) to the specified IP address(es) or domain name(s).
authentication {pre-share | rsa-sig}	Specifies whether to use a pre-shared key or a certificate for authentication.
keystring *pre_shared_key*	Sets the pre-shared key that can be used for authentication. The PRE_SHARED_KEY can be: • 8 - 32 alphanumeric characters or ,;|`~!@#$%^&*()_+\{}':./<>=-". • 16 - 64 hexadecimal (0-9, A-F) characters, preceded by "0x". The pre-shared key is case-sensitive.
certificate *certificate-name*	Sets the certificate that can be used for authentication.
local-id type {ip *ip* | fqdn *domain_name* | mail *e_mail* | dn *distinguished_name*}	Sets the local ID type and content to the specified IP address, domain name, or e-mail address.
peer-id type {any | ip *ip* | fqdn *domain_name* | mail *e_mail* | dn *distinguished_name*}	Sets the peer ID type and content to any value, the specified IP address, domain name, or e-mail address.
[no] xauth type {server *xauth_method* | client name *username* password *password*}	Enables extended authentication and specifies whether the ZyWALL is the server or client. If the ZyWALL is the server, it also specifies the extended authentication method (aaa authentication *profile_name*); if the ZyWALL is the client, it also specifies the username and password to provide to the remote IPSec router. The no command disables extended authentication. *username*: You can use alphanumeric characters, underscores (_), and dashes (-), and it can be up to 31 characters long. *password*: You can use most printable ASCII characters. You cannot use square brackets [ ], double quotation marks (“), question marks (?), tabs or spaces. It can be up to 31 characters long.

15.2.2 IPSec SA Commands (except Manual Keys)

This table lists the commands for IPSec SAs, excluding manual keys (VPN connections using VPN gateways).

Table 53 crypto map Commands: IPSec SAs

COMMAND	DESCRIPTION
show crypto map [*map_name*]	Shows the specified IPSec SA or all IPSec SAs.
crypto map dial *map_name*	Dials the specified IPSec SA manually. This command does not work for IPSec SAs using manual keys or for IPSec SAs where the remote gateway address is 0.0.0.0.
[no] crypto map *map_name*	Creates the specified IPSec SA if necessary and enters sub-command mode. The no command deletes the specified IPSec SA.
crypto map rename *map_name map_name*	Renames the specified IPSec SA (first *map_name*) to the specified name (second *map_name*).

Table 53 crypto map Commands: IPSec SAs (continued)

COMMAND	DESCRIPTION
`crypto map` *`map_name`*	
`activate` `deactivate`	Activates or deactivates the specified IPSec SA.
`ipsec-isakmp` *`policy_name`*	Specifies the IKE SA for this IPSec SA and disables manual key.
`encapsulation {tunnel | transport}`	Sets the encapsulation mode.
`transform-set` *`esp_crypto_algo`* `[`*`esp_crypto_algo`* `[`*`esp_crypto_algo`*`]]`	Sets the active protocol to ESP and sets the encryption and authentication algorithms for each proposal. *`esp_crypto_algo`*: {esp-3des-md5 | esp-3des-sha | esp-aes128-md5 | esp-aes128-sha | esp-aes192-md5 | esp-aes192-sha | esp-aes256-md5 | esp-aes256-sha | esp-des-md5 | esp-des-sha | esp-null-md5 | esp-null-sha}
`transform-set {ah-md5 | ah-sha} [{ah-md5 | ah-sha} [{ah-md5 | ah-sha}]]`	Sets the active protocol to AH and sets the encryption and authentication algorithms for each proposal.
`set security-association lifetime seconds <180..3000000>`	Sets the IPSec SA life time.
`set pfs {group1 | group2 | group5 | none}`	Enables Perfect Forward Secrecy group.
`local-policy` *`address_name`*	Sets the address object for the local policy (local network).
`remote-policy` *`address_name`*	Sets the address object for the remote policy (remote network).
`[no] policy-enforcement`	Drops traffic whose source and destination IP addresses do not match the local and remote policy. This makes the IPSec SA more secure. The `no` command allows traffic whose source and destination IP addresses do not match the local and remote policy. Note: You must allow traffic whose source and destination IP addresses do not match the local and remote policy, if you want to use the IPSec SA in a VPN concentrator.
`[no] nail-up`	Automatically re-negotiates the SA as needed. The `no` command does not.
`[no] replay-detection`	Enables replay detection. The `no` command disables it.
`[no] netbios-broadcast`	Enables NetBIOS broadcasts through the IPSec SA. The `no` command disables NetBIOS broadcasts through the IPSec SA.
`[no] out-snat activate`	Enables out-bound traffic SNAT over IPSec. The `no` command disables out-bound traffic SNAT over IPSec.
`out-snat source` *`address_name`* `destination` *`address_name`* `snat` *`address_name`*	Configures out-bound traffic SNAT in the IPSec SA.

Table 53 crypto map Commands: IPSec SAs (continued)

COMMAND	DESCRIPTION
`[no] in-snat activate`	Enables in-bound traffic SNAT in the IPSec SA. The no command disables in-bound traffic SNAT in the IPSec SA.
`in-snat source` *`address_name`* `destination` *`address_name`* `snat` *`address_name`*	Configures in-bound traffic SNAT in the IPSec SA.
`[no] in-dnat activate`	Enables in-bound traffic DNAT in the IPSec SA. The no command disables in-bound traffic DNAT in the IPSec SA.
`in-dnat delete <1..10>`	Deletes the specified rule for in-bound traffic DNAT in the specified IPSec SA.
`in-dnat move <1..10> to <1..10>`	Moves the specified rule (first rule number) to the specified location (second rule number) for in-bound traffic DNAT.
`in-dnat append protocol {all | tcp | udp} original-ip` *`address_name`* `<0..65535> <0..65535> mapped-ip` *`address_name`* `<0..65535> <0..65535>`	Maps the specified IP address and port range (original-ip) to the specified IP address and port range (mapped-ip) and appends this rule to the end of the rule list for in-bound traffic DNAT.
`in-dnat insert <1..10> protocol {all | tcp | udp} original-ip` *`address_name`* `<0..65535> <0..65535> mapped-ip` *`address_name`* `<0..65535> <0..65535>`	Maps the specified IP address and port range (original-ip) to the specified IP address and port range (mapped-ip) and inserts this rule before the specified rule.
`in-dnat <1..10> protocol {all | tcp | udp} original-ip` *`address_name`* `<0..65535> <0..65535>` *`mapped-ip address_name`* `<0..65535> <0..65535>`	Creates or revises the specified rule and maps the specified IP address and port range (original-ip) to the specified IP address and port range (mapped-ip).

15.2.3 IPSec SA Commands (for Manual Keys)

This table lists the additional commands for IPSec SAs using manual keys (VPN connections using manual keys).

Table 54 crypto map Commands: IPSec SAs (Manual Keys)

COMMAND	DESCRIPTION
`crypto map map_name`	
`set session-key {ah <256..4095> auth_key | esp <256..4095> [cipher enc_key] authenticator auth_key}`	Sets the active protocol, SPI (<256..4095>), authentication key and encryption key (if any). *auth_key*: You can use any alphanumeric characters or `,;|`~!@#$%^&*()_+\{}':./<>=-"`. The length of the key depends on the algorithm. md5 - 16-20 characters sha - 20 characters *enc_key*: You can use any alphanumeric characters or `,;\|`~!@#$%^&*()_+\{}':./<>=-"`. The length of the key depends on the algorithm. des - 8-32 characters 3des - 24-32 characters aes128 - 16-32 characters aes192 - 24-32 characters aes256 - 32 characters If you want to enter the key in hexadecimal, type “0x” at the beginning of the key. For example, "0x0123456789ABCDEF" is in hexadecimal format; in “0123456789ABCDEF” is in ASCII format. If you use hexadecimal, you must enter twice as many characters. The ZyWALL automatically ignores any characters above the minimum number of characters required by the algorithm. For example, if you enter `1234567890XYZ` for a DES encryption key, the ZyWALL only uses `12345678`. The ZyWALL still stores the longer key.
`local-ip ip`	Sets the local gateway address to the specified IP address.
`peer-ip ip`	Sets the remote gateway address to the specified IP address.

15.2.4 VPN Concentrator Commands

This table lists the commands for the VPN concentrator.

Table 55 vpn-concentrator Commands: VPN Concentrator

COMMAND	DESCRIPTION
`show vpn-concentrator [profile_name]`	Shows the specified VPN concentrator or all VPN concentrators.
`[no] vpn-concentrator profile_name`	Creates the specified VPN concentrator if necessary and enters sub-command mode. The `no` command deletes the specified VPN concentrator.

Table 55 vpn-concentrator Commands: VPN Concentrator (continued)

COMMAND	DESCRIPTION
`[no] crypto map_name`	Adds the specified IPSec SA to the specified VPN concentrator. The no command removes the specified IPSec SA from the specified VPN concentrator.
`vpn-concentrator rename profile_name profile_name`	Renames the specified VPN concentrator (first *profile_name*) to the specified name (second *profile_name*).

15.2.5 SA Monitor Commands

This table lists the commands for the SA monitor.

Table 56 sa Commands: SA Monitor

COMMAND	DESCRIPTION
`show sa monitor [{begin <1..000>} | {end <1..000>} | {rsort sort_order} | {crypto-map regexp} | {policy regexp} | {sort sort_order}`	Displays the current IPSec SAs and the status of each one. You can specify a range of SA entries to display. You can also control the sort order of the display and search by VPN connection or (local or remote) policy. *regexp*: A keyword or regular expression. Use up to 30 alphanumeric and _+-.()!$*^:?|{}[]<>/ characters. A question mark (?) lets a single character in the VPN connection or policy name vary. For example, use “a?c” (without the quotation marks) to specify abc, acc and so on. Wildcards (*) let multiple VPN connection or policy names match the pattern. For example, use “*abc” (without the quotation marks) to specify any VPN connection or policy name that ends with “abc”. A VPN connection named “testabc” would match. There could be any number (of any type) of characters in front of the “abc” at the end and the VPN connection or policy name would still match. A VPN connection or policy name named “testacc” for example would not match. A * in the middle of a VPN connection or policy name has the ZyWALL check the beginning and end and ignore the middle. For example, with “abc*123”, any VPN connection or policy name starting with “abc” and ending in “123” matches, no matter how many characters are in between. The whole VPN connection or policy name has to match if you do not use a question mark or asterisk.
`show isakmp sa`	Displays current IKE SA and the status of each one.
`no sa spi spi`	Deletes the SA specified by the SPI. *spi*: 2-8 hexadecimal (0-9, A-F) characters
`no sa tunnel-name map_name`	Deletes the specified IPSec SA.
`show vpn-counters`	Displays VPN traffic statistics.

16

SSL VPN

This chapter shows you how to set up secure SSL VPN access for remote user login.

16.1 SSL Access Policy

An SSL access policy allows the ZyWALL to perform the following tasks:

- limit user access to specific applications or files on the network.
- allow user access to specific networks.
- assign private IP addresses and provide DNS/WINS server information to remote users to access internal networks.

16.1.1 SSL Application Objects

SSL application objects specify an application type and server that users are allowed to access through an SSL tunnel. See Chapter 31 on page 203 for how to configure SSL application objects.

16.1.2 SSL Access Policy Limitations

You cannot delete an object that is used by an SSL access policy. To delete the object, you must first unassociate the object from the SSL access policy.

16.2 SSL VPN Commands

The following table describes the values required for some SSL VPN commands. Other values are discussed with the corresponding commands.

Table 57 Input Values for SSL VPN Commands

LABEL	DESCRIPTION
profile_name	The descriptive name of an SSL VPN access policy. You may use up to 31 characters (“a-z”, A-Z”, “0-9”) with no spaces allowed.
address_object	The name of an IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

Table 57 Input Values for SSL VPN Commands (continued)

LABEL	DESCRIPTION
application_object	The name of an SSL application object. You may use up to 31 characters (“0-9”, “a-z”, “A-Z”, “-” and “_”). No spaces are allowed.
user_name	The name of a user (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following sections list the SSL VPN commands.

16.2.1 SSL VPN Commands

This table lists the commands for SSL VPN. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 58 SSL VPN Commands

COMMAND	DESCRIPTION
`show sslvpn policy [`*profile_name*`]`	Displays the settings of the specified SSL VPN access policy.
`show network-extension local-ip`	Displays the IP address that the ZyWALL uses in setting up the SSL VPN.
`show sslvpn monitor`	Displays a list of the users who are currently logged into the VPN SSL client portal.
`sslvpn network-extension local-ip` *ip*	Sets the IP address that the ZyWALL uses in setting up the SSL VPN.
`sslvpn policy {`*profile_name* `|` *profile_name* `append |` *profile_name* `insert <1..16>}`	Enters the SSL VPN sub-command mode to add or edit an SSL VPN access policy.
`[no] activate`	Turns the SSL VPN access policy on or off.
`[no] application` *application_object*	Adds the SSL application object to the SSL VPN access policy.
`[no] description` *description*	Adds information about the SSL VPN access policy. Use up to 60 characters (“0-9”, “a-z”, “A-Z”, “-” and “_”).
`[no] network-extension {activate | ip-pool` *address_object* `| 1st-dns {`*address_object* `|` *ip* `} | 2nd-dns {`*address_object* `|` *ip* `} | 1st-wins {`*address_object* `|` *ip* `} | 2nd-wins {`*address_object* `|` *ip* `} | network` *address_object*`}`	Use this to configure for a VPN tunnel between the authenticated users and the internal network. This allows the users to access the resources on the network as if they were on the same local network. `ip-pool`: specify the name of the pool of IP addresses to assign to the user computers for the VPN connection. Specify the names of the DNS or WINS servers to assign to the remote users. This allows them to access devices on the local network using domain names instead of IP addresses. `network`: specify a network users can access.
`[no] user` *user_name*	Specifies the user or user group that can use the SSL VPN access policy.
`sslvpn policy move <1..16> to <1..16>`	Moves the specified SSL VPN access policy to the number that you specified.
`sslvpn no connection username` *user_name*	Terminates the user’s SSL VPN connection and deletes corresponding session information from the ZyWALL.
`no sslvpn policy` *profile_name*	Deletes the specified SSL VPN access policy.
`sslvpn policy rename` *profile_name profile_name*	Renames the specified SSL VPN access policy.

Table 58 SSL VPN Commands

COMMAND	DESCRIPTION
show workspace application	Displays the SSLVPN resources available to each user when logged into SSLVPN.
show workspace cifs	Displays the shared folders available to each user when logged into SSLVPN.

16.2.2 SSL Command Examples

Here is an example SSL VPN configuration.

```
Router(config)# interface ge2
Router(config-if-ge)# ip address 10.1.1.254 255.255.255.0
Router(config-if-ge)# exit
Router(config)# interface ge3
Router(config-if-ge)# ip address 172.23.10.254  255.255.255.0
Router(config-if-ge)# exit

Router(config)# address-object IP-POOL 192.168.100.1-192.168.100.10
Router(config)# address-object DNS1 172.23.5.1
Router(config)# address-object DNS2 168.95.1.1
Router(config)# address-object NETWORK1 172.23.10.0/24

Router(config)# username tester password 1234 user-type user

Router(config)# sslvpn policy SSL_VPN_TEST
Router(policy SSL_VPN_TEST)# activate
Router(policy SSL_VPN_TEST)# user tester
Router(policy SSL_VPN_TEST)# network-extension activate
Router(policy SSL_VPN_TEST)# network-extension ip-pool IP-POOL
Router(policy SSL_VPN_TEST)# network-extension 1st-dns DNS1
Router(policy SSL_VPN_TEST)# network-extension 2nd-dns 168.95.1.1
Router(policy SSL_VPN_TEST)# network-extension network NETWORK1
Router(policy SSL_VPN_TEST)# exit
Router(config)# show sslvpn policy SSL_VPN_TEST
index: 1
  active: yes
  name: SSL_VPN_TEST
  description:
  user: tester
  ssl applicaiton: none
  network extension: yes
  ip pool: IP-POOL
  dns server 1: DNS1
  dns server 2: DNS2
  wins server 1: none
  wins server 2: none
  network: NETWORK1
  reference count: 0
```

17

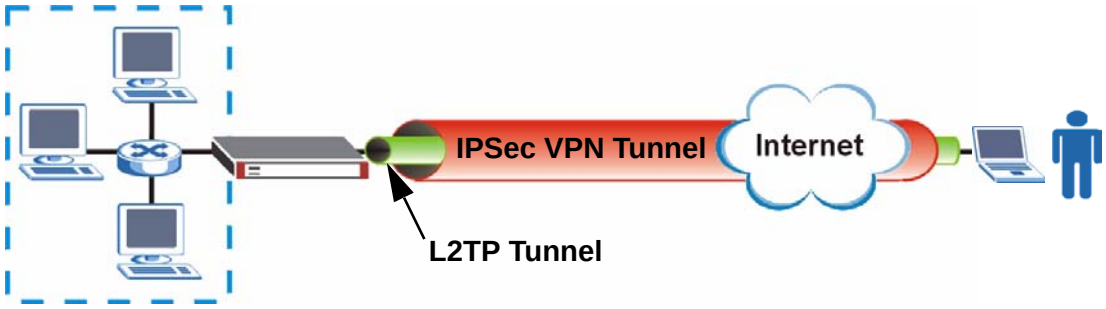
L2TP VPN

This chapter explains how to set up and maintain L2TP VPNs in the ZyWALL.

17.1 L2TP VPN Overview

L2TP VPN lets remote users use the L2TP and IPSec client software included with their computers' operating systems to securely connect to the network behind the ZyWALL. The remote users do not need their own IPSec gateways or VPN client software.

Figure 19 L2TP VPN Overview



The Layer 2 Tunneling Protocol (L2TP) works at layer 2 (the data link layer) to tunnel network traffic between two peers over another network (like the Internet). In L2TP VPN, an IPSec VPN tunnel is established first (see Chapter 15 on page 99 for information on IPSec) and then an L2TP tunnel is built inside it.

At the time of writing the L2TP remote user must have a public IP address in order for L2TP VPN to work (the remote user cannot be behind a NAT router or a firewall).

17.2 IPSec Configuration

You must configure an IPSec VPN connection for L2TP VPN to use (see Chapter 15 on page 99 for details). The IPSec VPN connection must:

- Be enabled.
- Use transport mode.

- Not be a manual key VPN connection.
- Use **Pre-Shared Key** authentication.
- Use a VPN gateway with the **Secure Gateway** set to **0.0.0.0** if you need to allow L2TP VPN clients to connect from more than one IP address.

17.2.1 Using the Default L2TP VPN Connection

Default_L2TP_VPN_Connection is pre-configured to be convenient to use for L2TP VPN. If you use it, edit the following.

Configure the local and remote policies as follows.

- For the **Local Policy**, create an address object that uses host type and contains the **My Address** IP address that you configured in the **Default_L2TP_VPN_GW**. Use this address object in the local policy.
- For the **Remote Policy**, create an address object that uses host type and an IP address of 0.0.0.0. Use this address object in the remote policy.

You must also edit the **Default_L2TP_VPN_GW** gateway entry.

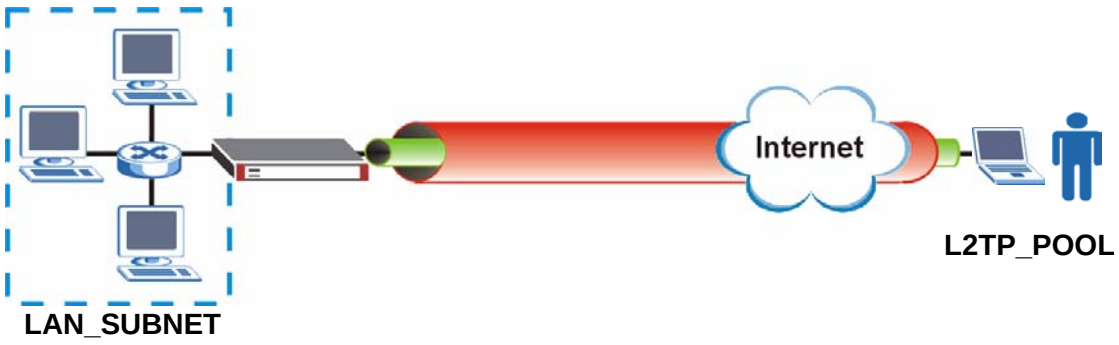
- Configure the **My Address** setting according to your requirements.
- Replace the default **Pre-Shared Key**.

17.3 Policy Route

You must configure a policy route to let remote users access resources on a network behind the ZyWALL.

- Set the policy route's **Source Address** to the address object that you want to allow the remote users to access (**LAN_SUBNET** in the following figure).
- Set the **Destination Address** to the IP address pool that the ZyWALL assigns to the remote users (**L2TP_POOL** in the following figure).

Figure 20 Policy Route for L2TP VPN



17.4 L2TP VPN Commands

The following table describes the values required for some L2TP VPN commands. Other values are discussed with the corresponding commands.

Table 59 Input Values for L2TP VPN Commands

LABEL	DESCRIPTION
address_object	The name of an IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
interface_name	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model. VLAN interface: vlan*x*, *x* = 0 - 31 bridge interface: br*x*, *x* = 0 - 11
ppp_interface	PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11
map_name	The name of an IPSec SA. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
user_name	The name of a user (group). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following sections list the L2TP VPN commands.

17.4.1 L2TP VPN Commands

This table lists the commands for L2TP VPN. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 60 L2TP VPN Commands

COMMAND	DESCRIPTION
`l2tp-over-ipsec recover default-ipsec-policy`	If the default L2TP IPSec policy has been deleted, use this command to recreate it (with the default settings).
`[no] l2tp-over-ipsec activate;`	Turns L2TP VPN on. The `no` command turns it off.
`l2tp-over-ipsec crypto` *`map_name`*	Specifies the IPSec VPN connection the ZyWALL uses for L2TP VPN. It must meet the requirements listed in Section 17.2 on page 111. Note: Modifying this VPN connection (or the VPN gateway that it uses) disconnects any existing L2TP VPN sessions.
`l2tp-over-ipsec pool` *`address-object`*	Specifies the address object that defines the pool of IP addresses that the ZyWALL uses to assign to the L2TP VPN clients.
`l2tp-over-ipsec authentication` *`aaa authentication profile_name`*	Specifies how the ZyWALL authenticates a remote user before allowing access to the L2TP VPN tunnel. The authentication method has the ZyWALL check a user's user name and password against the ZyWALL's local database, a remote LDAP, RADIUS, a Active Directory server, or more than one of these.
`[no] l2tp-over-ipsec user user_name`	Specifies the user or user group that can use the L2TP VPN tunnel. If you do not configure this, any user with a valid account and password on the ZyWALL to log in. The `no` command removes the user name setting.

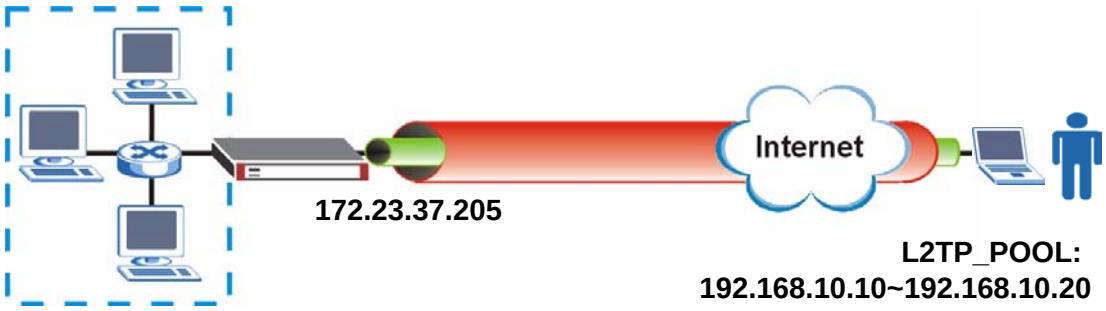
Table 60 L2TP VPN Commands

COMMAND	DESCRIPTION
`[no] l2tp-over-ipsec keepalive-timer <1..180>`	The ZyWALL sends a Hello message after waiting this long without receiving any traffic from the remote user. The ZyWALL disconnects the VPN tunnel if the remote user does not respond. The `no` command returns the default setting.
`[no] l2tp-over-ipsec first-dns-server {ip | interface_name} {1st-dns|2nd-dns|3rd-dns}| {ppp_interface|aux}{1st-dns|2nd-dns}}`	Specifies the first DNS server IP address to assign to the remote users. You can specify a static IP address, or a DNS server that an interface received from its DHCP server. The `no` command removes the setting.
`[no] l2tp-over-ipsec second-dns-server {ip | interface_name} {1st-dns|2nd-dns|3rd-dns}| {ppp_interface|aux}{1st-dns|2nd-dns}}`	Specifies the second DNS server IP address to assign to the remote users. You can specify a static IP address, or a DNS server that an interface received from its DHCP server. The `no` command removes the setting.
`[no] l2tp-over-ipsec first-wins-server ip`	Specifies the first WINS server IP address to assign to the remote users. The `no` command removes the setting.
`[no] l2tp-over-ipsec second-wins-server ip`	Specifies the second WINS server IP address to assign to the remote users. The `no` command removes the setting.
`no l2tp-over-ipsec session tunnel-id <0..65535>`	Deletes the specified L2TP VPN tunnel.
`show l2tp-over-ipsec`	Displays the L2TP VPN settings.
`show l2tp-over-ipsec session`	Displays current L2TP VPN sessions.

17.5 L2TP VPN Example

This example uses the following settings in creating a basic L2TP VPN tunnel. See the Web Configurator User's Guide for how to configure L2TP in remote user computers using Windows XP and Windows 2000.

Figure 21 L2TP VPN Example



- The ZyWALL has a static IP address of 172.23.37.205 for the ge3 interface.
- The remote user has a dynamic public IP address and connects through the Internet.
- You configure an IP address pool object named **L2TP_POOL** to assign the remote users IP addresses from 192.168.10.10 to 192.168.10.20 for use in the L2TP VPN tunnel.

- The VPN rule allows the remote user to access the **LAN_SUBNET** which covers the 192.168.1.1/24 subnet.

17.5.1 Configuring the Default L2TP VPN Gateway Example

The following commands configure the **Default_L2TP_VPN_GW** entry.

- Configure the **My Address** setting. This example uses interface ge3 with static IP address 172.23.37.205.
- Configure the **Pre-Shared Key**. This example uses “top-secret”.

```
Router(config)# isakmp policy Default_L2TP_VPN_GW
Router(config-isakmp Default_L2TP_VPN_GW)# local-ip interface ge3
Router(config-isakmp Default_L2TP_VPN_GW)# authentication pre-share
Router(config-isakmp Default_L2TP_VPN_GW)# keystring top-secret
Router(config-isakmp Default_L2TP_VPN_GW)# activate
Router(config-isakmp Default_L2TP_VPN_GW)# exit
Router(config)#
```

17.5.2 Configuring the Default L2TP VPN Connection Example

The following commands configure the **Default_L2TP_VPN_Connection** entry.

Enforce and configure the local and remote policies.

- For the **Local Policy**, create an address object that uses host type and contains the **My Address** IP address that you configured in the **Default_L2TP_VPN_GW**. The address object in this example uses IP address 172.23.37.205 and is named **L2TP_IFACE**.
- For the **Remote Policy**, create an address object that uses host type and an IP address of 0.0.0.0. It is named **L2TP_HOST** in this example.

```
Router(config)# crypto map Default_L2TP_VPN_Connection
Router(config-crypto Default_L2TP_VPN_Connection)# policy-enforcement
Router(config-crypto Default_L2TP_VPN_Connection)# local-policy L2TP_IFACE
Router(config-crypto Default_L2TP_VPN_Connection)# remote-policy L2TP_HOST
Router(config-crypto Default_L2TP_VPN_Connection)# activate
Router(config-crypto Default_L2TP_VPN_Connection)# exit
Router(config)#
```

17.5.3 Configuring the L2TP VPN Settings Example

The following commands configure and display the L2TP VPN settings.

- Set it to use the **Default_L2TP_VPN_Connection** VPN connection.
- Configure an IP address pool for the range of 192.168.10.10 to 192.168.10.20. In this example it is already created and called **L2TP_POOL**.
- This example uses the default authentication method (the ZyWALL’s local user data base).
- Select a user or group of users that can use the tunnel. Here a user account named **L2TP-test** has been created.
- The other settings are left to the defaults in this example.

- Enable the connection.

```
Router(config)# l2tp-over-ipsec crypto Default_L2TP_VPN_Connection
Router(config)# l2tp-over-ipsec pool L2TP_POOL
Router(config)# l2tp-over-ipsec authentication default
Router(config)# l2tp-over-ipsec user L2TP-test
Router(config)# l2tp-over-ipsec activate
Router(config)# show l2tp-over-ipsec
L2TP over IPSec:
  activate          : yes
  crypto            : Default_L2TP_VPN_Connection
  address pool      : L2TP_POOL
  authentication    : default
  user              : L2TP-test
  keepalive timer   : 60
  first dns server  : aux 1st-dns
  second dns server : aux 1st-dns
  first wins server :
  second wins server:
```

17.5.4 Configuring the Policy Route for L2TP Example

The following commands configure and display the policy route for the L2TP VPN connection entry.

- Set the policy route's **Source Address** to the address object that you want to allow the remote users to access (**LAN_SUBNET** in this example).
- Set the **Destination Address** to the IP address pool that the ZyWALL assigns to the remote users (**L2TP_POOL** in this example).
- Set the next hop to be the **Default_L2TP_VPN_Connection** tunnel.

- Enable the policy route.

```
Router(config)# policy 3
Router(policy-route)# source LAN_SUBNET
Router(policy-route)# destination L2TP_POOL
Router(policy-route)# service any
Router(policy-route)# next-hop tunnel
Default_L2TP_VPN_ConnectionRouter(policy-route)# no deactivate
Router(policy-route)# exit
Router(config)# show policy-route 3
index: 3
  active: yes
  description: WIZ_VPN
  user: any
  schedule: none
  interface: ge1
  tunnel: none
  sslvpn: none
  source: PC_SUBNET
  destination: L2TP_POOL
  service: any
  nexthop type: Tunnel
  nexthop: Default_L2TP_VPN_Connection
  bandwidth: 0
  bandwidth priority: 0
  maximize bandwidth usage: no
  SNAT: none
  amount of port trigger: 0
```

PART IV
Application Patrol & Anti-X

Application Patrol (121)
Anti-Virus (129)
IDP Commands (137)
Content Filtering (155)

18

Application Patrol

This chapter describes how to set up application patrol for the ZyWALL.

18.1 Application Patrol Overview

Application patrol provides a convenient way to manage the use of various applications on the network. It manages general protocols (for example, http and ftp) and instant messenger (IM), peer-to-peer (P2P), Voice over IP (VoIP), and streaming (RSTP) applications. You can even control the use of a particular application's individual features (like text messaging, voice, video conferencing, and file transfers). Application patrol also has powerful bandwidth management including traffic prioritization to enhance the performance of delay-sensitive applications like voice and video.

The ZyWALL checks firewall rules before application patrol rules for traffic going through the ZyWALL. To use a service, make sure both the firewall and application patrol allow the service's packets to go through the ZyWALL.

Application patrol examines every TCP and UDP connection passing through the ZyWALL and identifies what application is using the connection. Then, you can specify, by application, whether or not the ZyWALL continues to route the connection.

18.2 Application Patrol Commands Summary

The following table describes the values required for many application patrol commands. Other values are discussed with the corresponding commands.

Table 61 Input Values for Application Patrol Commands

LABEL	DESCRIPTION
protocol_name	The name of a pre-defined application. These are listed by category. general: ftp | smtp | pop3 | irc | http im: msn | aol-icq | yahoo | qq p2p: bittorrent | eDonkey | fasttrack | gnutella | napster | h323 | sip | soulseek stream: rtsp
zone_name	The name of a zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
schedule_name	The name of a schedule. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following sections list the application patrol commands.

18.2.1 Pre-defined Application Commands

This table lists the commands for each pre-defined application.

Table 62 app Commands: Pre-Defined Applications

COMMAND	DESCRIPTION
app *protocol_name* {forward | drop | reject}	Specifies what action the ZyWALL should take when it identifies this application.
[no] app *protocol_name* activate	Enables application patrol for the specified application. The no command disables application patrol for the specified application.
app *protocol_name* mode {portless | portbase}	Specifies how the ZyWALL identifies this application.
[no] app *protocol_name* log [alert]	Creates log entries (and alerts) for the specified application. The no command does not create any log entries.
[no] app *protocol_name* bwm	Turns on bandwidth management for the specified application. The no command turns off bandwidth management for the specified application.
app *protocol_name* bandwidth <0..102400>	Specifies the bandwidth limit (in kilobits per second) for the specified application.
[no] app *protocol_name* defaultport <1..65535>	For port-base applications. Adds the specified port to the list of ports used to identify the specified application. This port number can only be included in one application's list. The no command removes the specified port from the list.
[no] app *protocol_name* allowport <1..65535>	If the default action is drop or reject. Adds the specified port to the list of ports that are forwarded in spite of the default action. The no command removes the specified port from the list.

18.2.2 Rule Commands for Pre-defined Applications

This table lists the commands for rules in each pre-defined application.

Table 63 app Commands: Rules in Pre-Defined Applications

COMMAND	DESCRIPTION
app *protocol_name* rule insert <1..64>	Creates a new rule at the specified row and enters sub-command mode.
app *protocol_name* rule append	Creates a new rule, appends it to the end of the list, and enters sub-command mode.
app *protocol_name* rule <1..64>	Enters sub-command mode for editing the rule at the specified row.
app *protocol_name* rule default	Enters sub-command mode for editing the default rule for the application.
[no] activate	Turns on this rule. The no command turns off this rule.
[no] port <0..65535>	Specifies the destination port. 0 means any.
[no] schedule *profile_name*	Adds the specified schedule to the rule.
[no] user *username*	Adds the specified user to the rule.
[no] from *zone_name*	Specifies the source zone.
[no] to *zone_name*	Specifies the destination zone.
[no] source *profile_name*	Adds the specified source address to the rule.
[no] destination *profile_name*	Adds the specified destination address to the rule.
access {forward | drop | reject}	Specifies the action when traffic matches the rule.
[no] action-block {login|message|audio|video|file-transfer}	Blocks use of a specific feature.
bandwidth {inbound|outbound} <0..1048576>	Limits inbound or outbound bandwidth, in kilobits per second. 0 disables bandwidth management for traffic matching this rule.
[no] bandwidth excess-usage	Enables maximize bandwidth usage to let the traffic matching this policy “borrow” any unused bandwidth on the out-going interface.
bandwidth priority <1..7>	Set the priority for traffic that matches this rule. The smaller the number, the higher the priority.
[no] log [alert]	Creates log entries (and alerts) for traffic that matches the rule. The no command does not create any log entries.
show	Displays the rule’s configuration
no app *protocol_name* rule <1..64>	Deletes the specified rule.
app *protocol_name* rule move <1..64> to <1..64>	Moves the specified rule (first index) to the specified location. The process is (1) remove the specified rule from the table; (2) re-number; (3) insert the rule at the specified location.

18.2.3 Other Application Commands

This table lists the commands for other applications in application patrol.

Table 64 app Commands: Other Applications

COMMAND	DESCRIPTION
`app other {forward | drop | reject}`	Specifies the default action for other applications.
`[no] app other log [alert]`	Creates log entries (and alerts) for other applications. The `no` command does not create any log entries.

18.2.4 Rule Commands for Other Applications

This table lists the commands for rules in other applications.

Table 65 app Commands: Rules in Other Applications

COMMAND	DESCRIPTION
`app other insert <1..64>`	Creates a new rule at the specified row and enters sub-command mode.
`app other append`	Creates a new rule, appends it to the end of the list, and enters sub-command mode.
`app other <1..64>`	Enters sub-command mode for editing the rule at the specified row.
`app other default`	Enters sub-command mode for editing the default rule for traffic of an unidentified application.
`[no] activate`	Turns on this rule. The `no` command turns off this rule.
`[no] port <0..65535>`	Specifies the destination port. `0` means any.
`[no] schedule` *`profile_name`*	Adds the specified schedule to the rule.
`[no] user` *`username`*	Adds the specified user to the rule.
`[no] from` *`zone_name`*	Specifies the source zone.
`[no] to` *`zone_name`*	Specifies the destination zone.
`[no] source` *`profile_name`*	Adds the specified source address to the rule.
`[no] destination` *`profile_name`*	Adds the specified destination address to the rule.
`[no] protocol {tcp | udp}`	Adds the specified protocol to the rule.
`access {forward | drop | reject}`	Specifies the action when traffic matches the rule.
`[no] action-block {login|message|audio|video|file-transfer}`	Blocks use of a specific feature.
`bandwidth {inbound|outbound} <0..1048576>`	Limits inbound or outbound bandwidth, in kilobits per second. 0 disables bandwidth management for traffic matching this rule.
`[no] bandwidth excess-usage`	Enables maximize bandwidth usage to let the traffic matching this policy “borrow” any unused bandwidth on the out-going interface.
`bandwidth priority <1..7>`	Set the priority for traffic that matches this rule. The smaller the number, the higher the priority.
`[no] log [alert]`	Creates log entries (and alerts) for traffic that matches the rule. The `no` command does not create any log entries.

Table 65 app Commands: Rules in Other Applications (continued)

COMMAND	DESCRIPTION
show	Displays the rule's configuration
no app other <1..64>	Deletes the specified rule.
app other move <1..64> to <1..64>	Moves the specified rule (first index) to the specified location. The process is (1) remove the specified rule from the table; (2) re-number; (3) insert the rule at the specified location.

18.2.5 General Commands for Application Patrol

You must register for the IDP/AppPatrol signature service (at least the trial) before you can use it. See Chapter 4 on page 37.

This table lists the general commands for application patrol.

Table 66 app Commands: Pre-Defined Applications

COMMAND	DESCRIPTION
[no] app activate	Turns on application patrol. The no command turns off application patrol.
[no] app *protocol_name* bandwidth-graph	Sets the specified protocol to display on the bandwidth statistics graph. The no command has it not display on the bandwidth statistics graph.
[no] app other *protocol_name* bandwidth-graph	Sets traffic for unidentified applications to display on the bandwidth statistics graph. The no command it not display on the bandwidth statistics graph.
[no] bwm activate	Globally enables bandwidth management. You must globally activate bandwidth management to have individual policy routes or application patrol policies apply bandwidth management. The no command globally disables bandwidth management.
show app config	Displays whether or not application patrol is active.
show app all	Displays the settings for all applications.
show app all defaultport	Displays the default port settings for all applications.
show app all statistics	Displays statistics for all applications.
show app {general|im|p2p|stream}	Displays protocols by category.
show app im support action	Displays the supported actions of each Instant Messenger application.
show app *protocol_name* config	Displays the basic configuration of this application.
show app *protocol_name* defaultport	Displays the default ports of this application.
show app *protocol_name* statistics	Display the statistics of this application.
show app *protocol_name* rule <1..64>	Displays the rule configuration of this application.

Table 66 app Commands: Pre-Defined Applications (continued)

COMMAND	DESCRIPTION
show app *protocol_name* rule <1..64> statistics	Displays the rule statistics of this application.
show app *protocol_name* rule default	Displays the default rule configuration of this application.
show app *protocol_name* rule default statistics	Displays the default rule statistics of this application.
show app *protocol_name* rule all	Displays the configurations of all the rules for this application.
show app *protocol_name* rule all statistics	Displays all the rule statistics for this application.
show app other config	Displays the basic configuration for other applications,
show app other statistics	Displays statistics for other applications.
show app other rule <1..64>	Displays the rule's configuration.
show app other rule <1..64> statistics	Displays the rule's statistics.
show app other rule default	Displays the default rule's configuration.
show app other rule default statistics	Displays the default rule's statistics.
show app other rule all	Displays the configurations of all the rules for other applications.
show app other rule all statistics	Displays all the rule statistics for other applications.
show bwm activation	Displays whether or not the global setting for bandwidth management on the ZyWALL is enabled.

18.2.5.1 General Command Examples

The following examples show the information that is displayed by some of the show commands.

```
Router> configure terminal
Router(config)# show bwm activation
bwm activation: yes
```

```
Router# configure terminal
Router(config)# show app http config
application: http
  active: yes
  mode: portless
  default access: forward
  bandwidth graph: yes
```

```
Router# configure terminal
Router(config)# show app http defaultport
No.   Port
============================================================================
1     80
```

```
Router# configure terminal
Router(config)# show app http rule all
index: default
  activate: yes
  port: 0
  schedule: none
  user: any
  from zone: any
  to zone: any
  source address: any
  destination address: any
  access: forward
  action login: na
  action message: na
  action audio: na
  action video: na
  action file-transfer: na
  bandwidth excess-usage: no
  bandwidth priority: 1
  bandwidth inbound: 0
  bandwidth outbound: 0
  log: no
```

```
Router# configure terminal
Router(config)# show app other config
bandwidth-graph: yes
```

```
Router# configure terminal
Router(config)# show app other rule all
index: 1
  activate: yes
  port: 5963
  schedule: none
  user: any
  from zone: any
  to zone: any
  source address: any
  destination address: any
  protocol: tcp
  access: forward
  bandwidth excess-usage: no
  bandwidth priority: 1
  bandwidth inbound: 0
  bandwidth outbound: 0
  log: no
index: default
  activate: yes
  port: 0
  schedule: none
  user: any
  from zone: any
  to zone: any
  source address: any
  destination address: any
  protocol: any
  access: forward
  bandwidth excess-usage: no
  bandwidth priority: 1
  bandwidth inbound: 0
  bandwidth outbound: 0
  log: no
```

19

Anti-Virus

This chapter introduces and shows you how to configure the anti-virus scanner.

19.1 Anti-Virus Overview

A computer virus is a small program designed to corrupt and/or alter the operation of other legitimate programs. A worm is a self-replicating virus that resides in active memory and duplicates itself. The effect of a virus attack varies from doing so little damage that you are unaware your computer is infected to wiping out the entire contents of a hard drive to rendering your computer inoperable.

19.2 Anti-virus Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 67 Input Values for General Anti-Virus Commands

LABEL	DESCRIPTION
zone_object	The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
av_file_pattern	Use up to 80 characters to specify a file pattern. Alphanumeric characters, underscores (_), dashes (-), question marks (?) and asterisks (*) are allowed. A question mark (?) lets a single character in the file name vary. For example, use “a?.zip” (without the quotation marks) to specify aa.zip, ab.zip and so on. Wildcards (*) let multiple files match the pattern. For example, use “*a.zip” (without the quotation marks) to specify any file that ends with “a.zip”. A file named “testa.zip” would match. There could be any number (of any type) of characters in front of the “a.zip” at the end and the file name would still match. A file named “test.zipa” for example would not match. A * in the middle of a pattern has the ZyWALL check the beginning and end of the file name and ignore the middle. For example, with “abc*.zip”, any file starting with “abc” and ending in “.zip” matches, no matter how many characters are in between. The whole file name has to match if you do not use a question mark or asterisk. If you do not use a wildcard, the ZyWALL checks up to the first 80 characters of a file name.

19.2.1 General Anti-virus Commands

The following table describes general anti-virus commands. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

You must register for the ant-virus service before you can use it (see Chapter 19 on page 129).

Table 68 General Anti-virus Commands

COMMAND	DESCRIPTION
`[no] anti-virus activate`	Enables anti-virus service. anti-virus service also depends on anti-virus service registration.
`show anti-virus activation`	Displays anti-virus service status.
`[no] anti-virus eicar activate`	Turns detection of the EICAR test file on or off.
`show anti-virus eicar activation`	Displays whether or not detection of the EICAR test file is turned on.
`anti-virus reload signatures`	Recovers the anti-virus signatures. You should only need to do this if instructed to do so by a support technician.

19.2.1.1 Activate/Deactivate Anti-Virus Example

This example shows how to activate and deactivate anti-virus on the ZyWALL.

```
Router# configure terminal
Router(config)# anti-virus activate
Router(config)# show anti-virus activation
anti-virus activation: yes
Router(config)# no anti-virus activate
Router(config)# show anti-virus activation
anti-virus activation: no
Router(config)#
```

19.2.2 Zone to Zone Anti-virus Rules

The following table describes the commands for configuring the zone to zone rules. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 69 Commands for Zone to Zone Anti-Virus Rules

COMMAND	DESCRIPTION
`anti-virus rule append`	Enters the anti-virus sub-command mode to add a direction specific rule.
`anti-virus rule insert <1..32>`	Enters the anti-virus sub-command mode to add a direction specific rule.
`anti-virus rule <1..32>`	Enters the anti-virus sub-command mode to edit the specified direction specific rule.
`[no] activate`	Turns a direction specific anti-virus rule on or off.

Table 69 Commands for Zone to Zone Anti-Virus Rules (continued)

COMMAND	DESCRIPTION
`[no] log [alert]`	Sets the ZyWALL to create a log (and optionally an alert) when packets match this rule and are found to be virus-infected. The no command sets the ZyWALL not to create a log or alert when packets match this rule.
`[no] from zone_object`	Sets the zone on which the packets are received. The no command removes the zone on which the packets are received and resets it to the default (any). any means all interfaces or VPN tunnels.
`[no] to zone_object`	Sets the zone to which the packets are sent. The no command removes the zone to which the packets are sent and resets it to the default (any). any means all interfaces or VPN tunnels.
`[no] scan {http | ftp | imap4 | smtp | pop3}`	Sets the protocols of traffic to scan for viruses.
`[no] infected-action {destroy | send-win-msg}`	Sets the action to take when the ZyWALL detects a virus in a file. The file can be destroyed (filled with zeros from the point where the virus was found). The ZyWALL can also send a message alert to the file's intended user using a Microsoft Windows computer connected to the to interface.
`[no] bypass {white-list | black-list}`	Have the ZyWALL not check files against a pattern list.
`[no] file-decompression [unsupported destroy]`	Enable file decompression to have the ZyWALL attempt to to decompress zipped files for further scanning. You can also have it destroy the zipped files it cannot decompress due to encryption or system resource limitations.
`show [all]`	Displays the details of the anti-virus rule you are configuring or all the rules.
`anti-virus rule move <1..32> to <1..32>`	Moves a direction specific anti-virus rule to the number that you specified.
`anti-virus rule delete <1..32>`	Removes a direction specific anti-virus rule.

19.2.2.1 Zone to Zone Anti-virus Rule Example

This example shows how to configure (and display) a WAN to LAN antivirus rule to scan HTTP traffic and destroy infected files. The white and black lists are ignored and zipped files are decompressed. Any zipped files that cannot be decompressed are destroyed.

```
Router(config)# anti-virus rule 1
Router(config-av-rule-1)# activate
Router(config-av-rule-1)# from-zone WAN
Router(config-av-rule-1)# to-zone LAN
Router(config-av-rule-1)# scan http
Router(config-av-rule-1)# infected-action destroy
Router(config-av-rule-1)# bypass white-list
Router(config-av-rule-1)# no bypass black-list
Router(config-av-rule-1)# file-decompression
Router(config-av-rule-1)# no file-decompression unsupported
destroy
Router(config-av-rule-1)#exit
Router(config)# show anti-virus rule 1
Anti-Virus Rule: 1
 active: yes
 log: log
 from zone: WAN
 to zone: LAN
 scan protocols:
   http: yes
   ftp : yes
   smtp: yes
   pop3: yes
   imap4: yes
 infected action:
   destroy: yes
   send windows message: yes
 bypass white list: yes
 bypass black list: no
 file decompression: yes
   destroy unsupported compressed file: no
```

19.2.3 White and Black Lists

The following table describes the commands for configuring the white list and black list. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 70 Commands for Anti-virus White and Black Lists

COMMAND	DESCRIPTION
`[no] anti-virus white-list activate`	Turn on the white list to have the ZyWALL not perform the anti-virus check on files with names that match the white list patterns.
`[no] anti-virus white-list file-pattern` *`av_file_pattern`* `{activate|deactivate}`	Adds or removes a white list file pattern. Turns a file pattern on or off.
`anti-virus white-list replace` *`old_av_file_pattern new_av_file_pattern`* `{activate|deactivate}`	Replaces the specified white list file pattern with a new file pattern.

Table 70 Commands for Anti-virus White and Black Lists (continued)

COMMAND	DESCRIPTION
`[no] anti-virus black-list activate`	Turn on the black list to log and delete files with names that match the black list patterns.
`[no] anti-virus black-list file-pattern` *`av_file_pattern`* `{activate|deactivate}`	Adds or removes a black list file pattern. Turns a file pattern on or off.
`anti-virus black-list replace` *`old_av_file_pattern new_av_file_pattern`* `{activate|deactivate}`	Replaces the specified black list file pattern with a new file pattern.

19.2.3.1 White and Black Lists Example

This example shows how to enable the white list and configure an active white list entry for files with a .exe extension. It also enables the black list and configure an inactive black list entry for files with a .exe extension.

```
Router(config)# anti-virus white-list activate
Router(config)# anti-virus white-list file-pattern
Router(config)# anti-virus white-list file-pattern *.exe activate
Router(config)# anti-virus black-list activate
Router(config)# anti-virus black-list file-pattern *.exe deactivate
Router(config)# show anti-virus white-list status
anti-virus white-list status: yes
Router(config)# show anti-virus white-list
No.  Status
File-Pattern
==============================================================================
1    yes
*.exe
Router(config)# show anti-virus black-list status
anti-virus black-list status: yes
Router(config)# show anti-virus black-list
No.  Status
File-Pattern
==============================================================================
1    no
*.exe
```

19.2.4 Signature Search Anti-virus Command

The following table describes the command for searching for signatures. You must use the `configure terminal` command to enter the configuration mode before you can use this command.

Table 71 Command for Anti-virus Signature Search

COMMAND	DESCRIPTION
`anti-virus search signature {all | category` *`category`* `| id` *`id`* `| name` *`name`* `| severity` *`severity`* `[{from` *`id`* `to` *`id`*`}]`	Search for signatures by their ID, name, severity, or category. `all`: displays all signatures. `category`: select whether you want to see `virus` signatures or `spyware` signatures. *`id`*: type the ID or part of the ID of the signature you want to find. *`name`*: type the name or part of the name of the signature(s) you want to find. This search is not case-sensitive. *`severity`*: type the severity level of the signatures you want to find (`high`, `medium`, or `low`).

19.2.4.1 Signature Search Example

This example shows how to search for anti-virus signatures with MSN in the name.

```
Router(config)# anti-virus search signature name MSN
signature: 1
 virus id: 41212
 virus name: MSN
 category: virus
 severity: Low
```

19.3 Update Anti-virus Signatures

Use these commands to update new signatures.You should have already registered for anti-virus service.

Table 72 Update Signatures

COMMAND	DESCRIPTION
`anti-virus update signatures`	Immediately downloads signatures from an update server.
`[no] anti-virus update auto`	Enables (disables) automatic signature downloads at regular times and days.
`anti-virus update hourly`	Enables automatic signature download every hour.
`anti-virus update daily <0..23>`	Enables automatic signature download every day at the time specified.
`anti-virus update weekly {sun | mon | tue | wed | thu | fri | sat} <0..23>`	Enables automatic signature download once-a-week at the time and day specified.
`show anti-virus update`	Displays signature update schedule.
`show anti-virus update status`	Displays signature update status.
`show anti-virus signatures status`	Displays details about the current signature set.

19.3.1 Update Signature Examples

These examples show how to enable/disable automatic anti-virus downloading, schedule updates, display the schedule, display the update status, show the (new) updated signature version number, show the total number of signatures and show the date/time the signatures were created.

```
Router# configure terminal
Router(config)# anti-virus update signatures
ANTI-VIRUS signature update in progress.
Please check system log for future information.
Router(config)# anti-virus update auto
Router(config)# no anti-virus update auto
Router(config)# anti-virus update hourly
Router(config)# anti-virus update daily 10
Router(config)# anti-virus update weekly fri 13
Router(config)# show anti-virus update
auto: yes
schedule: weekly at Friday 13 o'clock
Router(config)# show anti-virus update status
current status: Anti-Virus Current signature version 1.046 on device is
latest at Tue Apr 17 10:18:00 2007
last update time: 2007/04/07 10:41:01
Router(config)# show anti-virus signatures status
current version : 1.046
release date    : 2007/04/06 10:41:29
signature number: 4124
```

19.4 Anti-virus Statistics

The following table describes the commands for collecting and displaying anti-virus statistics. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 73 Commands for Anti-virus Statistics

COMMAND	DESCRIPTION
`[no] anti-virus statistics collect`	Turn the collection of anti-virus statistics on or off.
`anti-virus statistics flush`	Clears the collected statistics.
`show anti-virus statistics summary`	Displays the collected statistics.
`show anti-virus statistics collect`	Displays whether the collection of anti-virus statistics is turned on or off.
`show anti-virus statistics ranking {destination | source | virus-name}`	Query and sort the anti-virus statistics entries by destination IP address, source IP address, or virus name. `virus-name`: lists the most common viruses detected. `source`: lists the source IP addresses of the most virus-infected files. `destination:` lists the most common destination IP addresses for virus-infected files.

19.4.1 Anti-virus Statistics Example

This example shows how to collect and display anti-virus statistics. It also shows how to sort the display by the most common destination IP addresses.

```
Router(config)# anti-virus statistics collect
Router(config)# show anti-virus statistics collect
collect statistics: yes
Router(config)# show anti-virus statistics summary
file scanned  : 0
virus detected: 0
Router(config)# show anti-virus statistics ranking destination
```

20

IDP Commands

This chapter introduces IDP-related commands.

20.1 Overview

Commands mostly mirror web configurator features. It is recommended you use the web configurator for IDP features such as searching for web signatures, creating/editing an IDP profile or creating/editing a custom signature. Some web configurator terms may differ from the command-line equivalent.

The “no” command negates the action or returns it to the default value.

The following table lists valid input for IDP commands.

Table 74 Input Values for IDP Commands

LABEL	DESCRIPTION
zone_profile	It can consist of alphanumeric characters, the underscore, and the dash, and it is 1-31 characters long. Spaces are not allowed.
idp_profile	It can consist of alphanumeric characters, the underscore, and the dash, and it is 1-31 characters long. Spaces are not allowed.

20.2 General IDP Commands

20.2.1 IDP Activation

You must register for the IDP/AppPatrol signature service (at least the trial) before you can use it. See Chapter 4 on page 37.

This table shows the IDP signature, anomaly, and system-protect activation commands.

Table 75 IDP Activation

COMMAND	DESCRIPTION
`[no] idp {signature | anomaly | system-protect} activate`	Enables IDP signatures, anomaly detection, and/or system-protect. IDP signatures use requires IDP service registration. If you don't have a standard license, you can register for a once-off trial one. Anomaly detection and the self-protect feature do not require registration. The `no` command disables the specified service.
`idp system-protect deactivate`	Disables system-protect.
`show idp {signature | anomaly | system-protect} activation`	Displays IDP signature, anomaly detection, or system protect service status.
`idp reload`	Recovers the IDP signatures. You should only need to do this if instructed to do so by a support technician.

20.2.1.1 Activate/Deactivate IDP Example

This example shows how to activate and deactivate signature-based IDP on the ZyWALL.

```
Router# configure terminal
Router(config)# idp signature activate
Router(config)# show idp signature activation
idp signature activation: yes
Router(config)# no idp signature activate
Router(config)# show idp signature activation
idp signature activation: no
```

20.3 IDP Profile Commands

20.3.1 Global Profile Commands

Use these commands to rename or delete existing profiles and show IDP base profiles.

Table 76 Global Profile Commands

COMMAND	DESCRIPTION
`idp rename {signature | anomaly} profile1 profile2`	Rename an IDP signature or anomaly profile originally named *profile1* to *profile2*.
`no idp {signature | anomaly} profile3`	Delete an IDP signature or system protect profile named *profile3*.
`show idp {signature | anomaly} base profile`	Displays all IDP signature or system protect base profiles.
`show idp profiles`	Displays all IDP signature profiles.

20.3.1.1 Example of Global Profile Commands

In this example we rename an IDP signature profile from “old_profile” to “new_profile”, delete the “bye_profile” and show all base profiles available.

```
Router# configure terminal
Router(config)# idp rename signature old_profile new_profile
Router(config)# no idp signature bye_profile
Router(config)# show idp signature base profile
No.  Base Profile Name
============================================================
1    none
2    all
3    wan
4    lan
5    dmz
Router(config)#
```

20.3.2 IDP Zone to Zone Rules

Use the following rules to apply IDP profiles to specific directions of packet travel.

Table 77 IDP Zone to Zone Rule Commands

COMMAND	DESCRIPTION
idp {signature| anomaly } rule { append | <1..32> | insert <1..32> }	Create an IDP signature or anomaly rule and enter the sub-command mode.
bind *profile*	Binds the IDP profile to the entry’s traffic direction.
no bind	Removes the IDP profile’s binding.
[no] from-zone *zone_profile*	Specifies the zone the traffic is coming from. The no command removes the zone specification.
[no] to-zone *zone_profile*	Specifies the zone the traffic is going to. The no command removes the zone specification.
[no] activate	Turns on the IDP profile to traffic direction binding. The no command turns it off.
idp {signature| anomaly } rule { delete <1..32> | move <1..32> to <1..32> }	Remove or move an IDP profile to traffic direction entry.
no idp {signature| anomaly } rule <1..32>	Removes an IDP profile to traffic direction entry.
show idp {signature| anomaly } rules	Displays the IDP zone to zone rules.

20.3.2.1 Example of IDP Zone to Zone Rule Commands

The following example creates IDP zone to zone rule one. The rule applies the LAN_IDP profile to all traffic going to the LAN zone.

```
Router# configure terminal
Router(config)# idp signature rule 1
Router(config-idp-signature-1)#
Router(config-idp-signature-1)# exit
Router(config)#
Router(config-idp-signature-1)# from-zone any
Router(config-idp-signature-1)# to-zone LAN
Router(config-idp-signature-1)# bind LAN_IDP
Router(config-idp-signature-1)# activate
Router(config)#show idp signature rules
Signature rules
idp rule: 1
  from zone: any
  to zone: LAN
  profile: LAN_IDP
  activate: yes
```

20.3.3 Editing/Creating IDP Signature Profiles

Use these commands to create a new IDP signature profile or edit an existing one. It is recommended you use the web configurator to create/edit profiles. If you do not specify a base profile, the default base profile is none.

You CANNOT change the base profile later!

Table 78 Editing/Creating IDP Signature Profiles

COMMAND	DESCRIPTION
`idp signature` *`newpro`* `[base {all | lan | wan | dmz | none}]`	Creates a new IDP signature profile called *`newpro`*. *`newpro`* uses the base profile you specify. Enters sub-command mode. All the following commands relate to the new profile. Use `exit` to quit sub-command mode.
`[no] signature` *`sid`* `activate`	Activates or deactivates an IDP signature.
`signature` *`sid`* `log [alert]`	Sets log or alert options for an IDP signature
`no signature` *`sid`* `log`	Deactivates log options for an IDP signature
`signature` *`sid`* `action {drop | reject-sender | reject-receiver | reject-both}`	Sets an action for an IDP signature
`no signature` *`sid`* `action`	Deactivates an action for an IDP signature.
`show idp` *`profile`* `signature` *`sid`* `details`	Shows signature ID details of the specified profile.
`show idp` *`profile`* `signature {all | custom-signature} details`	Shows the signature details of the specified profile.

20.3.4 Editing/Creating Anomaly Profiles

Use these commands to create a new anomaly profile or edit an existing one. It is recommended you use the web configurator to create/edit profiles. If you do not specify a base profile, the default base profile is none.

You CANNOT change the base profile later!

Table 79 Editing/Creating Anomaly Profiles

COMMAND	DESCRIPTION
`idp anomaly` *`newpro`* `[base {all | none}]`	Creates a new IDP anomaly profile called *`newpro`*. *`newpro`* uses the base profile you specify. Enters sub-command mode. All the following commands relate to the new profile. Use `exit` to quit sub-command mode.
`scan-detection sensitivity {low | medium | high}`	Sets scan-detection sensitivity.
`no scan-detection sensitivity`	Clears scan-detection sensitivity. The default sensitivity is medium.
`scan-detection block-period <1..3600>`	Sets for how many seconds the ZyWALL blocks all packets from being sent to the victim (destination) of a detected anomaly attack.
`[no] scan-detection {tcp-xxx} {activate | log [alert] | block}`	Activates TCP scan detection options where {tcp-xxx} = {tcp-portscan | tcp-decoy-portscan | tcp-portsweep | tcp-distributed-portscan | tcp-filtered-portscan | tcp-filtered-decoy-portscan | tcp-filtered-distributed-portscan | tcp-filtered-portsweep}. Also sets TCP scan-detection logs or alerts and blocking. `no` deactivates TCP scan detection, its logs, alerts or blocking.
`[no] scan-detection {udp-xxx} {activate | log [alert] | block}`	Activates or deactivates UDP scan detection options where {udp-xxx} = {udp-portscan | udp-decoy-portscan | udp-portsweep | udp-distributed-portscan | udp-filtered-portscan | udp-filtered-decoy-portscan | udp-filtered-distributed-portscan | udp-filtered-portsweep}. Also sets UDP scan-detection logs or alerts and blocking. `no` deactivates UDP scan detection, its logs, alerts or blocking.
`[no] scan-detection {ip-xxx} {activate | log [alert] | block}`	Activates or deactivates IP scan detection options where {ip-xxx} = {ip-protocol-scan | ip-decoy-protocol-scan | ip-protocol-sweep | ip-distributed-protocol-scan | ip-filtered-protocol-scan | ip-filtered-decoy-protocol-scan | ip-filtered-distributed-protocol-scan | ip-filtered-protocol-sweep}. Also sets IP scan-detection logs or alerts and blocking. `no` deactivates IP scan detection, its logs, alerts or blocking.
`[no] scan-detection {icmp-sweep | icmp-filtered-sweep} {activate | log [alert] | block}`	Activates or deactivates ICMP scan detection options. Also sets ICMP scan-detection logs or alerts and blocking. `no` deactivates ICMP scan detection, its logs, alerts or blocking.

Table 79 Editing/Creating Anomaly Profiles (continued)

COMMAND	DESCRIPTION
`[no] scan-detection open-port {activate | log [alert] | block}`	Activates or deactivates open port scan detection options. Also sets open port scan-detection logs or alerts and blocking. no deactivates open port scan detection, its logs, alerts or blocking.
`flood-detection block-period <1..3600>`	Sets for how many seconds the ZyWALL blocks all packets from being sent to the victim (destination) of a detected anomaly attack.
`[no] flood-detection {tcp-flood | udp-flood | ip-flood | icmp-flood} {activate | log [alert] | block}`	Activates or deactivates TCP, UDP, IP or ICMP flood detection. Also sets flood detection logs or alerts and blocking. no deactivates flood detection, its logs, alerts or blocking.
`[no] http-inspection {http-xxx} activate`	Activates or deactivates http-inspection options where http-xxx = {ascii-encoding | u-encoding | bare-byte-unicode-encoding | base36-encoding | utf-8-encoding | iis-unicode-codepoint-encoding | multi-slash-encoding | iis-backslash-evasion | self-directory-traversal | directory-traversal | apache-whitespace | non-rfc-http-delimiter | non-rfc-defined-char | oversize-request-uri-directory | oversize-chunk-encoding | webroot-directory-traversal}
`http-inspection {http-xxx} log [alert]`	Sets http-inspection log or alert.
`no http-inspection {http-xxx} log`	Deactivates http-inspection logs.
`[no] http-inspection {http-xxx} action {drop | reject-sender | reject-receiver | reject-both}}`	Sets http-inspection action
`[no] tcp-decoder {tcp-xxx} activate`	Activates or deactivates tcp decoder options where {tcp-xxx} = {undersize-len | undersize-offset | oversize-offset | bad-length-options | truncated-options | ttcp-detected | obsolete-options | experimental-options}
`tcp-decoder {tcp-xxx} log [alert]`	Sets tcp decoder log or alert options.
`no tcp-decoder {tcp-xxx} log`	Deactivates tcp decoder log or alert options.
`[no] tcp-decoder {tcp-xxx} action {drop | reject-sender | reject-receiver | reject-both}}`	Sets tcp decoder action
`[no] udp-decoder {truncated-header | undersize-len | oversize-len} activate`	Activates or deactivates udp decoder options
`udp-decoder {truncated-header | undersize-len | oversize-len} log [alert]`	Sets udp decoder log or alert options.
`no udp-decoder {truncated-header | undersize-len | oversize-len} log`	Deactivates udp decoder log options.
`udp-decoder {truncated-header | undersize-len | oversize-len} action {drop | reject-sender | reject-receiver | reject-both}`	Sets udp decoder action
`no udp-decoder {truncated-header | undersize-len | oversize-len} action`	Deactivates udp decoder actions.

Table 79 Editing/Creating Anomaly Profiles (continued)

COMMAND	DESCRIPTION
[no] icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} activate	Activates or deactivates icmp decoder options
icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} log [alert]	Sets icmp decoder log or alert options.
no icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} log	Deactivates icmp decoder log options.
icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} action {drop | reject-sender | reject-receiver | reject-both}}	Sets icmp decoder action
no icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} action	Deactivates icmp decoder actions.
show idp anomaly *profile* scan-detection [all details]	Shows all scan-detection settings of the specified IDP profile.
show idp anomaly *profile* scan-detection {tcp-portscan | tcp-decoy-portscan | tcp-portsweep | tcp-distributed-portscan | tcp-filtered-portscan | tcp-filtered-decoy-portscan | tcp-filtered-distributed-portscan | tcp-filtered-portsweep} details	Shows selected TCP scan-detection settings for the specified IDP profile.
show idp anomaly *profile* scan-detection {udp-portscan | udp-decoy-portscan | udp-portsweep | udp-distributed-portscan | udp-filtered-portscan | udp-filtered-decoy-portscan | udp-filtered-distributed-portscan | udp-filtered-portsweep} details	Shows UDP scan-detection settings for the specified IDP profile.
show idp anomaly *profile* scan-detection {ip-protocol-scan | ip-decoy-protocol-scan | ip-protocol-sweep | ip-distributed-protocol-scan | ip-filtered-protocol-scan | ip-filtered-decoy-protocol-scan | ip-filtered-distributed-protocol-scan | ip-filtered-protocol-sweep} details	Shows IP scan-detection settings for the specified IDP profile.
show idp anomaly *profile* scan-detection {icmp-sweep | icmp-filtered-sweep | open-port} details	Shows ICMP scan-detection settings for the specified IDP profile.
show idp anomaly *profile* flood-detection [all details]	Shows all flood-detection settings for the specified IDP profile.
show idp anomaly *profile* flood-detection {tcp-flood | udp-flood | ip-flood | icmp-flood} details	Shows flood-detection settings for the specified IDP profile.
show idp anomaly *profile* http-inspection all details	Shows http-inspection settings for the specified IDP profile.

Table 79 Editing/Creating Anomaly Profiles (continued)

COMMAND	DESCRIPTION
`show idp anomaly` *`profile`* `http-inspection {ascii-encoding | u-encoding | bare-byte-unicode-encoding | base36-encoding | utf-8-encoding | iis-unicode-codepoint-encoding | multi-slash-encoding | iis-backslash-evasion | self-directory-traversal | directory-traversal | apache-whitespace | non-rfc-http-delimiter | non-rfc-defined-char | oversize-request-uri-directory | oversize-chunk-encoding | webroot-directory-traversal} details`	Shows http-inspection settings for the specified IDP profile.
`show idp anomaly` *`profile`* `tcp-decoder all details`	Shows tcp-decoder settings for the specified IDP profile.
`show idp anomaly` *`profile`* `tcp-decoder {undersize-len | undersize-offset | oversize-offset | bad-length-options | truncated-options | ttcp-detected | obsolete-options | experimental-options} details`	Shows tcp-decoder settings for the specified IDP profile.
`show idp anomaly` *`profile`* `udp-decoder all details`	Shows udp-decoder settings for the specified IDP profile.
`show idp anomaly` *`profile`* `udp-decoder {truncated-header | undersize-len | oversize-len} details`	Shows specified udp-decoder settings for the specified IDP profile.
`show idp anomaly` *`profile`* `icmp-decoder all details`	Shows all icmp-decoder settings for the specified IDP profile.
`show idp anomaly` *`profile`* `icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} details`	Shows specified icmp-decoder settings for the specified IDP profile.

20.3.4.1 Creating an Anomaly Profile Example

In this example we create a profile named “test”, configure some settings, display them, and then return to global command mode.

```
Router# configure terminal
Router(config)# idp anomaly test
Router(config-idp-anomaly-profile-test)# tcp-decoder oversize-offset
action drop
Router(config-idp-anomaly-profile-test)# tcp-decoder oversize-offset log
alert
Router(config-idp-anomaly-profile-test)# tcp-decoder oversize-offset
activate
Router(config-idp-anomaly-profile-test)# no tcp-decoder oversize-offset
activate
Router(config-idp-anomaly-profile-test)# exit
Router(config)# show idp anomaly test tcp-decoder oversize-offset
details
message: (tcp_decoder) OVERSIZE-OFFSET ATTACK
  keyword: tcp-decoder oversize-offset
  activate: no
  action: drop
  log: log alert
Router(config)#
```

20.3.5 Editing System Protect

Use these commands to edit the system protect profiles.

Table 80 Editing System Protect Profiles

COMMAND	DESCRIPTION
`idp system-protect`	Configure the system protect profile. Enters sub-command mode. All the following commands relate to the new profile. Use `exit` to quit sub-command mode.
`[no] signature sid activate`	Activates or deactivates an IDP signature.
`signature sid log [alert]`	Sets log or alert options for an IDP signature
`no signature sid log`	Deactivates log options for an IDP signature
`signature sid action {drop | reject-sender | reject-receiver | reject-both}`	Sets an action for an IDP signature
`no signature SID action`	Deactivates an action for an IDP signature.
`show idp system-protect all details`	Displays the system protect profile details.

20.3.6 Signature Search

Use this command to search for signatures in the named profile.

It is recommended you use the web configurator to search for signatures.

Table 81 Signature Search Command

COMMAND	DESCRIPTION
`idp search signature my_profile name quoted_string sid SID severity severity_mask platform platform_mask policytype policytype_mask service service_mask activate {any | yes | no} log {any | no | log | log-alert} action action_mask`	Searches for signature(s) in a profile by the parameters specified. The quoted string is any text within the signature name in quotes, for example, [idp search LAN_IDP name "WORM" sid 0 severity 0 platform 0 policytype 0 service 0 activate any log any action] searches for all signatures in the LAN_IDP profile containing the text “worm” within the signature name.
`idp search system-protect my_profile name quoted_string sid SID severity severity_mask platform platform_mask policytype policytype_mask service service_mask activate {any | yes | no} log {any | no | log | log-alert} action action_mask`	Searches for signature(s) in a system-protect profile by the parameters specified. The quoted string is any text within the signature name in quotes, for example, [idp search LAN_IDP name "WORM" sid 0 severity 0 platform 0 policytype 0 service 0 activate any log any action] searches for all signatures in the LAN_IDP profile containing the text “worm” within the signature name.

Table 81 Signature Search Command

COMMAND	DESCRIPTION
`show idp search signature` *`my_profile`* `name` *`quoted_string`* `sid SID severity` *`severity_mask`* `platform` *`platform_mask`* `policytype` *`policytype_mask`* `service` *`service_mask`* `activate {any | yes | no} log {any | no | log | log-alert} action` *`action_mask`*	Searches for signature(s) in a profile by the parameters specified. The quoted string is any text within the signature name in quotes, for example, [idp search LAN_IDP name "WORM" sid 0 severity 0 platform 0 policytype 0 service 0 activate any log any action] searches for all signatures in the LAN_IDP profile containing the text “worm” within the signature name.
`show idp search system-protect` *`my_profile`* `name` *`quoted_string`* `sid SID severity` *`severity_mask`* `platform` *`platform_mask`* `policytype` *`policytype_mask`* `service` *`service_mask`* `activate {any | yes | no} log {any | no | log | log-alert} action` *`action_mask`*	Searches for signature(s) in a system-protect profile by the parameters specified. The quoted string is any text within the signature name in quotes, for example, [idp search LAN_IDP name "WORM" sid 0 severity 0 platform 0 policytype 0 service 0 activate any log any action] searches for all signatures in the LAN_IDP profile containing the text “worm” within the signature name.

20.3.6.1 Search Parameter Tables

The following table displays the command line severity, platform and policy type equivalent values. If you want to combine platforms in a search, then add their respective numbers together. For example, to search for signatures for Windows NT, Windows XP and Windows 2000 computers, then type “12” as the platform parameter.

Table 82 Severity, Platform and Policy Type Command Values

SEVERITY	PLATFORM	POLICY TYPE
1 = Very Low 2 = Low 3 = Medium 4 = High 5 = Severe	1 = All 2 = Win95/98 4 = WinNT 8 = WinXP/2000 16 = Linux 32 = FreeBSD 64 = Solaris 128 = SGI 256 = Other-Unix 512 = Network-Device	1 = DoS 2 = Buffer-Overflow 3 = Access-Control 4 = Scan 5 = Backdoor/Trojan 6 = Others 7 = P2P 8 = IM 9 = Virtus/Worm 10 = Porn 11 = Web-Attack 12 = Spam

The following table displays the command line service and action equivalent values. If you want to combine services in a search, then add their respective numbers together. For example, to search for signatures for DNS, Finger and FTP services, then type “7” as the service parameter.

Table 83 Service and Action Command Values

SERVICE	SERVICE	ACTION
1 = DNS 2 = FINGER 4 = FTP 8 = MYSQL 16 = ICMP 32 = IM 64 = IMAP 128 = MISC 256 = NETBIOS 512 = NNTP 1024 = ORACLE 2048 = P2P 4096 = POP2 8192 = POP3 16384 = RPC 32768 = RSERVICES	65536 = SMTP 131072 = SNMP 262144 = SQL 524288 = TELNET 1048576 = TFTP 2097152 = n/a 4194304 = WEB_ATTACKS 8388608 = WEB_CGI 16777216 = WEB_FRONTPAGE 33554432 = WEB_IIS 67108864 = WEB_MISC 134217728 = WEB_PHP 268435456 = MISC_BACKDOOR 536870912 = MISC_DDOS 1073741824 = MISC_EXPLOIT	1 = None 2 = Drop 4 = Reject-sender 8 = Reject-receiver 16 = Reject-both

20.3.6.2 Signature Search Example

This example command searches for all signatures in the LAN_IDP profile:

- Containing the text “worm” within the signature name
- With an ID of 12345
- Has a very low severity level
- Operates on the Windows NT platform
- Is a scan policy type, DNS service
- Is enabled
- Generates logs.

```
Router# configure terminal
Router(config)#
Router(config)# idp search signature LAN_IDP name “worm” sid 12345 severity
-> 1 platform 4 policytype 4 service 1 activate yes log log action 2
```

20.4 IDP Custom Signatures

Use these commands to create a new signature or edit an existing one.

It is recommended you use the web configurator to create/edit signatures using the web configurator **Anti-X > IDP > Custom Signatures** screen.

You must use the web configurator to import a custom signature file.

Table 84 Custom Signatures

COMMAND	DESCRIPTION
`idp customize signature` *`quoted_string`*	Create a new custom signature. The quoted string is the signature command string enclosed in quotes. for example. "alert tcp any any <> any any (msg: \"test\"; sid: 9000000 ;)".
`idp customize signature edit` *`quoted_string`*	Edits an existing custom signature.
`no idp customize signature` *`custom_sid`*	Deletes a custom signature.
`show idp signatures custom-signature` *`custom_sid`* `{details | contents | non-contents}`	Displays custom signature information.
`show idp signatures custom-signature all details`	Displays all custom signatures' information.
`show idp signatures custom-signature number`	Displays the total number of custom signatures.

20.4.1 Custom Signature Examples

These examples show how to create a custom signature, edit one, display details of one, all and show the total number of custom signatures.

```
Router# configure terminal
Router(config)# idp customize signature "alert tcp any any <> any any
(msg: \"test\"; sid: 9000000 ;  )"
sid: 9000000
  message: test
  policy type:
  severity:
  platform:
    all: no
    Win95/98: no
    WinNT: no
    WinXP/2000: no
    Linux: no
    FreeBSD: no
    Solaris: no
    SGI: no
    other-Unix: no
    network-device: no
  service:
  outbreak: no
```

This example shows you how to edit a custom signature.

```
Router(config)# idp customize signature edit "alert tcp any any <> any any
(msg : \"test edit\"; sid: 9000000 ;  )"
sid: 9000000
  message: test edit
  policy type:
  severity:
  platform:
    all: no
    Win95/98: no
    WinNT: no
    WinXP/2000: no
    Linux: no
    FreeBSD: no
    Solaris: no
    SGI: no
    other-Unix: no
    network-device: no
  service:
  outbreak: no
```

This example shows you how to display custom signature details.

```
Router(config)# show idp signatures custom-signature 9000000 details
sid: 9000000
  message: test edit
  policy type:
  severity:
  platform:
    all: no
    Win95/98: no
    WinNT: no
    WinXP/2000: no
    Linux: no
    FreeBSD: no
    Solaris: no
    SGI: no
    other-Unix: no
    network-device: no
  service:
  outbreak: no
```

This example shows you how to display custom signature contents.

```
Router(config)# show idp signatures custom-signature 9000000 contents
sid: 9000000
Router(config)# show idp signatures custom-signature 9000000 non-contents
sid: 9000000
  ack:
  dport: 0
  dsize:
  dsize_rel:
  flow_direction:
  flow_state:
  flow_stream:
  fragbits_reserve:
  fragbits_dontfrag:
  fragbits_morefrag:
  fragoffset:
  fragoffset_rel:
  icmp_id:
  icmp_seq:
  icode:
  icode_rel:
  id:
  ipopt:
  itype:
  itype_rel:
  sameip:
  seq:
  sport: 0
  tcp_flag_ack:
  tcp_flag_fin:
  tcp_flag_push:
  tcp_flag_r1:
  tcp_flag_r2:
  tcp_flag_rst:
  tcp_flag_syn:
  tcp_flag_urg:
  threshold_type:
  threshold_track:
  threshold_count:
  threshold_second:
  tos:
  tos_rel:
  transport: tcp
  ttl:
  ttl_rel:
  window:
  window_rel:
```

This example shows you how to display all details of a custom signature.

```
Router(config)# show idp signatures custom-signature all details
sid: 9000000
  message: test edit
  policy type:
  severity:
  platform:
    all: no
    Win95/98: no
    WinNT: no
    WinXP/2000: no
    Linux: no
    FreeBSD: no
    Solaris: no
    SGI: no
    other-Unix: no
    network-device: no
  service:
  outbreak: no
```

This example shows you how to display the number of custom signatures on the ZyWALL.

```
Router(config)# show idp signatures custom-signature number
signatures:  1
```

20.5 Update IDP Signatures

Use these commands to update new signatures.You register for IDP service before you can update IDP signatures, although you do not have to register in order to update system-protect signatures.

You must use the web configurator to import a custom signature file.

Table 85 Update Signatures

COMMAND	DESCRIPTION
idp {signature | system-protect} update signatures	Immediately downloads IDP or system protect signatures from an update server.
[no] idp {signature | system-protect} update auto	Enables (disables) automatic signature downloads at regular times and days.
idp {signature | system-protect} update hourly	Enables automatic signature download every hour.
idp {signature | system-protect} update daily <0..23>	Enables automatic signature download every day at the time specified.
idp {signature | system-protect} update weekly {sun | mon | tue | wed | thu | fri | sat} <0..23>	Enables automatic signature download once-a-week at the time and day specified.

Table 85 Update Signatures

COMMAND	DESCRIPTION
`show idp {signature | system-protect} update`	Displays signature update schedule.
`show idp {signature | system-protect} update status`	Displays signature update status.
`show idp {signature | system-protect} signatures {version | date | number}`	Displays signature information

20.5.1 Update Signature Examples

These examples show how to enable/disable automatic IDP downloading, schedule updates, display the schedule, display the update status, show the (new) updated signature version number, show the total number of signatures and show the date/time the signatures were created.

```
Router# configure terminal
Router(config)# idp signature update signatures
IDP signature update in progress.
Please check system log for future information.
Router(config)# idp update auto
Router(config)# no idp update auto
Router(config)# idp update hourly
Router(config)# idp update daily 10
Router(config)# idp update weekly fri 13
Router(config)# show idp update
auto: yes
schedule: weekly at Friday 13 o'clock
Router(config)# show idp signature update status
current status: IDP signature download failed, do 1 retry at Sat Jan  4
22:47:47  2003
last update time: 2003-01-01 01:34:39
Router(config)# show idp signature signatures version
version: 1.2000
Router(config)# show idp signature signatures number
signatures: 2000
Router(config)# show idp signature signatures date
date: 2005/11/13 13:56:03
```

20.6 IDP Statistics

The following table describes the commands for collecting and displaying IDP statistics. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 86 Commands for IDP Statistics

COMMAND	DESCRIPTION
`[no] idp statistics collect`	Turn the collection of IDP statistics on or off.
`idp statistics flush`	Clears the collected statistics.
`show idp statistics summary`	Displays the collected statistics.

Table 86 Commands for IDP Statistics (continued)

COMMAND	DESCRIPTION
`show idp statistics collect`	Displays whether the collection of IDP statistics is turned on or off.
`show idp statistics ranking {signature-name | source | destination}`	Query and sort the IDP statistics entries by signature name, source IP address, or destination IP address. `signature-name`: lists the most commonly detected signatures. `source`: lists the source IP addresses from which the ZyWALL has detected the most intrusion attempts. `destination:` lists the most common destination IP addresses for detected intrusion attempts.

20.6.1 IDP Statistics Example

This example shows how to collect and display IDP statistics. It also shows how to sort the display by the most common signature name, source IP address, or destination IP address.

```
Router# configure terminal
Router(config)# idp statistics collect
Router(config)# no idp statistics activate
Router(config)# idp statistics flush
Router(config)# show idp statistics collect status
IDP collect statistics status: yes
Router(config)# show idp statistics summary
scanned session : 268
packet dropped: 0
packet reset: 0
Router(config)# show idp statistics ranking signature-name
ranking: 1
  signature id: 8003796
  signature name: ICMP L3retriever Ping
  type: Scan
  severity: verylow
  occurence: 22
ranking: 2
  signature id: 8003992
  signature name: ICMP Large ICMP Packet
  type: DDOS
  severity: verylow
  occurence: 4
Router(config)# show idp statistics ranking destination
ranking: 1
  destination ip: 172.23.5.19
  occurence: 22
ranking: 2
  destination ip: 172.23.5.1
  occurence: 4
Router(config)# show idp statistics ranking source
ranking: 1
  source ip: 192.168.1.34
  occurence: 26
```

21

Content Filtering

This chapter covers how to use the content filtering feature to control web access.

21.1 Content Filtering Overview

Content filtering allows you to block certain web features, such as cookies, and/or block access to specific web sites. It can also block access to specific categories of web site content. You can create different content filtering policies for different addresses, schedules, users or groups and content filtering profiles. For example, you can configure one policy that blocks John Doe's access to arts and entertainment web pages during the workday and another policy that lets him access them after work.

21.2 Content Filtering Policies

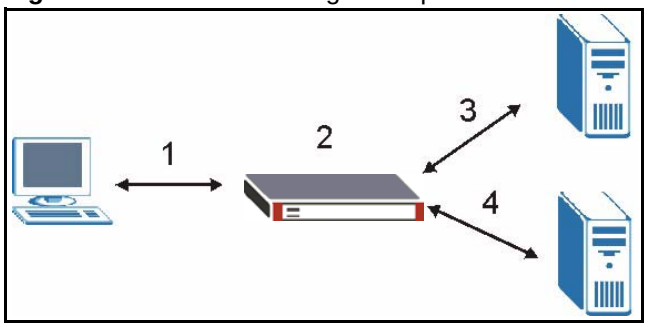
A content filtering policy allows you to do the following.

- Use schedule objects to define when to apply a content filtering profile.
- Use address and/or user/group objects to define to whose web access to apply the content filtering profile.
- Apply a content filtering profile that you have custom-tailored.

21.3 External Web Filtering Service

When you register for and enable the external web filtering service, your ZyWALL accesses an external database that has millions of web sites categorized based on content. You can have the ZyWALL block, block and/or log access to web sites based on these categories. The content filtering lookup process is described below.

Figure 22 Content Filtering Lookup Procedure



1. A computer behind the ZyWALL tries to access a web site.
2. The ZyWALL looks up the web site in its cache. If an attempt to access the web site was made in the past, a record of that web site's category will be in the ZyWALL's cache. The ZyWALL blocks, blocks and logs or just logs the request based on your configuration.
3. Use the **Anti-X > Content Filter Cache** screen to configure how long a web site address remains in the cache as well as view those web site addresses. All of the web site address records are also cleared from the local cache when the ZyWALL restarts.
4. If the ZyWALL has no record of the web site, it queries the external content filtering database and simultaneously sends the request to the web server.
5. The external content filtering server sends the category information back to the ZyWALL, which then blocks and/or logs access to the web site based on the settings in the content filtering profile. The web site's address and category are then stored in the ZyWALL's content filtering cache.

21.4 Content Filtering Reports

See the web configurator User's Guide to see how to view content filtering reports after you have activated the category-based content filtering subscription service.

21.5 Content Filter Command Input Values

The following table explains the values you can input with the `content-filter` commands.

Table 87 Content Filter Command Input Values

LABEL	DESCRIPTION
policy_number	The number of the policy <0...15> to define the searching sequence of the filtering policies.
address	The name (up to 63 characters) of an existing address object or group to which the policy should be applied.
schedule	The name (up to 63 characters) of an existing schedule to control when the policy should be applied.
filtering_profile	The filtering profile defines how to filter web URLs or content. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
category_number	The number of a web category <0…60>. Each number corresponds to a category name.

Table 87 Content Filter Command Input Values (continued)

LABEL	DESCRIPTION
category_name	The name of a web category (see Table 88 on page 158).
trust_hosts	The IP address or domain name of a trusted web site. Use a host name such as www.good-site.com. Do not use the complete URL of the site – that is, do not include “http://”. All subdomains are allowed. For example, entering “zyxel.com” also allows “www.zyxel.com”, “partner.zyxel.com”, “press.zyxel.com”, etc. Use up to 63 case-insensitive characters (0-9a-z-). You can enter a single IP address in dotted decimal notation like 192.168.2.5. You can enter a subnet by entering an IP address in dotted decimal notation followed by a slash and the bit number of the subnet mask of an IP address. The range is 0 to 32. To find the bit number, convert the subnet mask to binary and add all of the 1’s together. Take “255.255.255.0” for example. 255 converts to eight 1’s in binary. There are three 255’s, so add three eights together and you get the bit number (24). An example is 192.168.2.1/24 You can enter an IP address range by entering the start and end IP addresses separated by a hyphen, for example 192.168.2.5-192.168.2.23.
forbid_hosts	The IP address or domain name of a forbidden web site. Use a host name such as www.bad-site.com into this text field. Do not use the complete URL of the site – that is, do not include “http://”. All subdomains are also blocked. For example, entering “bad-site.com” also blocks “www.bad-site.com”, “partner.bad-site.com”, “press.bad-site.com”, etc. Use up to 63 case-insensitive characters (0-9a-z-). You can enter a single IP address in dotted decimal notation like 192.168.2.5. You can enter a subnet by entering an IP address in dotted decimal notation followed by a slash and the bit number of the subnet mask of an IP address. The range is 0 to 32. To find the bit number, convert the subnet mask to binary and add all of the 1’s together. Take “255.255.255.0” for example. 255 converts to eight 1’s in binary. There are three 255’s, so add three eights together and you get the bit number (24). An example is 192.168.2.1/24 You can enter an IP address range by entering the start and end IP addresses separated by a hyphen, for example 192.168.2.5-192.168.2.23.
keyword	A keyword or a numerical IP address to search URLs for and block access to if they contain it. Use up to 63 case-insensitive characters (0-9a-zA-Z;/?:@&=+$\.-_!~*'()%,) in double quotes. For example enter “Bad_Site” to block access to any web page that includes the exact phrase “Bad_Site”. This does not block access to web pages that only include part of the phrase (such as “Bad” in this example).
message	The message to display when a web site is blocked. Use up to 255 characters (0-9a-zA-Z;/?:@&=+$\.-_!~*'()%,) in quotes. For example, “Access to this web page is not allowed. Please contact the network administrator.”
redirect_url	The URL of the web page to which you want to send users when their web access is blocked by content filtering. The web page you specify here opens in a new frame below the denied access message. Use “http://” followed by up to 255 characters (0-9a-zA-Z;/?:@&=+$\.-_!~*'()%) in quotes. For example, “http://192.168.1.17/blocked access”.
license	The license key (up to 15 characters) for the external web filtering service.
service_timeout	The value specifies the maximum querying time in seconds <1…60>
cache_timeout	The value specifies the maximum cache life time in hours <1..720>.
url	The URL of a web site.

Table 87 Content Filter Command Input Values (continued)

LABEL	DESCRIPTION
rating_server	The hostname or IP address of the rating server.
query_timeout	The value specifies the maximum querying time when rating a URL in zysh. <1..60> seconds.

The following table lists the content filtering web category names.

Table 88 Content Filtering Web Category Names

CATEGORY NAME	CATEGORY NAME
Adult/Mature Content	Pornography
Sex Education	Intimate Apparel/Swimsuit
Nudity	Alcohol/Tobacco
Illegal/Questionable	Gambling
Violence/Hate/Racism	Weapons
Abortion	Hacking
Phishing	Arts/Entertainment
Business/Economy	Alternative Spirituality/Occult
Illegal Drugs	Education
Cultural/Charitable Organization	Financial Services
Brokerage/Trading	Online Games
Government/Legal	Military
Political/Activist Groups	Health
Computers/Internet	Search Engines/Portals
Spyware/Malware Sources	Spyware Effects/Privacy Concerns
Job Search/Careers	News/Media
Personals/Dating	Reference
Open Image/Media Search	Chat/Instant Messaging
Email	Blogs/Newsgroups
Religion	Social Networking
Online Storage	Remote Access Tools
Shopping	Auctions
Real Estate	Society/Lifestyle
Sexuality/Alternative Lifestyles	Restaurants/Dining/Food
Sports/Recreation/Hobbies	Travel
Vehicles	Humor/Jokes
Software Downloads	Pay to Surf
Peer-to-Peer	Streaming Media/MP3s
Proxy Avoidance	For Kids
Web Advertisements	Web Hosting
Unrated	

21.6 General Content Filter Commands

The following table lists the commands that you can use for general content filter configuration such as enabling content filtering, viewing and ordering your list of content filtering policies, creating a denial of access message or specifying a redirect URL and checking your external web filtering service registration status. Use the `configure terminal` command to enter the configuration mode to be able to use these commands. See Table 87 on page 156 for details about the values you can input with these commands.

Table 89 content-filter General Commands

COMMAND	DESCRIPTION
`[no] content-filter active`	Turns on content filtering. The no command turns it off.
`[no] content-filter block message` *`message`*	Sets the message to display when content filtering blocks access to a web page. The no command clears the setting.
`[no] content-filter block redirect` *`redirect_url`*	Sets the URL of the web page to which to send users when their web access is blocked by content filtering. The no command clears the setting.
`[no] content-filter cache-timeout` *`cache_timeout`*	Sets how long the ZyWALL is to keep an entry in the content filtering URL cache before discarding it. The no command clears the setting.
`[no] content-filter default block`	Has the ZyWALL block sessions that do not match a content filtering policy. The no command allows sessions that do not match a content filtering policy.
`[no] content-filter license` *`license`*	Sets the license key for the external web filtering service. The no command clears the setting.
`[no] content-filter policy` *`policy_number address schedule filtering_profile`*	Sets a content filtering policy. The no command removes it.
`content-filter policy` *`policy_number`* `shutdown`	Disables a content filtering policy.
`content-filter url-cache test` *`url`*	Tests whether or not a web site is saved in the ZyWALL's database of restricted web pages.
`content-filter url-server test url [ server` *`rating_server`* `] [ timeout` *`query_timeout`* `]`	Tests whether or not a web site is saved in the external content filter server's database of restricted web pages.
`show content-filter policy`	Displays the content filtering policies.
`show content-filter settings`	Displays the general content filtering settings.
`show content-filter url-cache`	Displays the contents of the content filtering URL cache before discarding it.

21.7 Content Filter Filtering Profile Commands

The following table lists the commands that you can use to configure a content filtering policy. A content filtering policy defines which content filter profile should be applied, when it should be applied, and to whose web access it should be applied. Use the `configure terminal` command to enter the configuration mode to be able to use these commands. See Table 87 on page 156 for details about the values you can input with these commands.

Table 90 content-filter Filtering Profile Commands Summary

COMMAND	DESCRIPTION
`[no] content-filter license` *`license`*	Sets the license key for the external web filtering service. The no command clears the setting.
`[no] content-filter profile` *`filtering_profile`*	Creates a content filtering profile. The no command removes the profile.
`[no] content-filter profile` *`filtering_profile`* `custom`	Sets a content filtering profile to use a profile's custom settings (lists of trusted web sites and forbidden web sites and blocking of certain web features). The no command has the profile not use the custom settings.
`[no] content-filter profile` *`filtering_profile`* `custom activex`	Sets a content filtering profile to block ActiveX controls. The no command sets the profile to allow ActiveX.
`[no] content-filter profile` *`filtering_profile`* `custom cookie`	Sets a content filtering profile to block Cookies. The no command sets the profile to allow Cookies.
`[no] content-filter profile` *`filtering_profile`* `custom forbid` *`forbid_hosts`*	Adds a web site to a content filtering profile's forbidden list. The no command removes a web site from the forbidden list.
`[no] content-filter profile` *`filtering_profile`* `custom java`	Sets a content filtering profile to block Java. The no command sets the profile to allow Java.
`[no] content-filter profile` *`filtering_profile`* `custom keyword` *`keyword`*	Has a content filtering profile block access to Web sites with URLs that contain the specified keyword or IP address in the URL. The no command removes the keyword.
`[no] content-filter profile` *`filtering_profile`* `custom proxy`	Sets a content filtering profile to block access to web proxy servers. The no command sets the profile to allow access to proxy servers.
`[no] content-filter profile` *`filtering_profile`* `custom trust` *`trust_hosts`*	Adds a web site to a content filtering profile's trusted list. The no command removes a web site from the trusted list.
`[no] content-filter profile` *`filtering_profile`* `custom trust-allow-features`	Sets a content filtering profile to permit Java, ActiveX and Cookies from sites on the trusted list. The no command has the content filtering profile not permit Java, ActiveX and Cookies from sites on the trusted list
`[no] content-filter profile` *`filtering_profile`* `custom trust-only`	Sets a content filtering profile to only allow access to web sites that are on the trusted list. The no command has the profile allow access to web sites that are not on the trusted list.
`[no] content-filter profile` *`filtering_profile`* `url category {category_name}`	Sets a content filtering profile to check for specific web site categories. The no command has the profile not check for the specified categories.

Table 90 content-filter Filtering Profile Commands Summary (continued)

COMMAND	DESCRIPTION
`[no] content-filter profile filtering_profile url match {block | log | block_log}`	Sets a content filtering profile to block, allow and log or block and log access to web pages that match the categories that you select for the profile. The no command clears the setting.
`[no] content-filter profile filtering_profile url offline {block | log | block_log}`	Sets a content filtering profile to block, allow and log or block and log access to requested web pages if the external content filtering database is unavailable. The no command clears the setting.
`[no] content-filter profile filtering_profile url unrate {block | log | block_log}`	Sets a content filtering profile to block, allow and log or block and log access to web pages that the external web filtering service has not categorized. The no command clears the setting.
`[no] content-filter profile filtering_profile url url-server`	Sets a content filtering profile to use the external web filtering service. The no command has the profile not use the external web filtering service.
`[no] content-filter service-timeout service_timeout`	Sets how many seconds the ZyWALL is to wait for a response from the external content filtering server. The no command clears the setting.
`content-filter url-cache test url`	Tests whether or not a web site is saved in the ZyWALL's database of restricted web pages.
`content-filter url-server test url [server rating_server] [timeout query_timeout]`	Tests whether or not a web site is saved in the external content filter server's database of restricted web pages.
`show content-filter profile [filtering_profile]`	Displays the specified content filtering profile's settings or the settings of all them if you don't specify one.

21.8 Content Filter Cache Commands

The following table lists the commands that you can use to view and configure your ZyWALL's URL caching. You can configure how long a categorized web site address remains in the cache as well as view those web site addresses to which access has been allowed or blocked based on the responses from the external content filtering server. The ZyWALL only queries the external content filtering database for sites not found in the cache.

Use the `configure terminal` command to enter the configuration mode to be able to use these commands. See Table 87 on page 156 for details about the values you can input with these commands.

Table 91 content-filter cache Cache Commands

COMMAND	DESCRIPTION
`[no] content-filter cache-timeout cache_timeout`	Sets how long the ZyWALL is to keep an entry in the content filtering URL cache before discarding it. The no command clears the setting.
`show content-filter url-cache`	Displays the contents of the content filtering URL cache before discarding it.

21.9 Content Filtering Commands Example

The following example shows how to limit the web access for a sales group.

1. First, create a sales address object. This example uses a subnet that covers IP addresses 172.21.3.1 to 172.21.3.254.
2. Then create a schedule for all day.
3. Create a filtering profile for the group.
4. You can use the following commands to block sales from accessing adult and pornography websites.
5. Enable the external web filtering service.

You must register for the external web filtering service before you can use it (see Chapter 4 on page 37).

6. You can also customize the filtering profile. The following commands block active-X, java and proxy access.
7. Activate the customization.

```
Router# configure terminal
Router(config)# address-object sales 172.21.3.0/24
Router(config)# schedule-object all_day 00:00 23:59
Router(config)# content-filter profile sales_CF_PROFILE
Router(config)# content-filter profile sales_CF_PROFILE url category adult-mature-
content
Router(config)# content-filter profile sales_CF_PROFILE url category pornography
Router(config)# content-filter profile sales_CF_PROFILE url url-server
Router(config)# content-filter profile sales_CF_PROFILE custom java
Router(config)# content-filter profile sales_CF_PROFILE custom activex
Router(config)# content-filter profile sales_CF_PROFILE custom proxy
Router(config)# content-filter profile sales_CF_PROFILE custom
```

Use this command to display the settings of the profile.

```
Router(config)# show content-filter profile sales_CF_PROFILE
service active : yes
url match      : block:  no, log:  no
url unrate     : block:  no, log:  no
service offline: block:  no, log:  no

category settings:
Adult/Mature Content            :  no, Pornography                     :  no
Sex Education                   :  no, Intimate Apparel/Swimsuit       :  no
Nudity                          :  no, Alcohol/Tobacco                 :  no
Illegal/Questionable            :  no, Gambling                        :  no
Violence/Hate/Racism            :  no, Weapons                         :  no
Abortion                        :  no, Hacking                         :  no
Phishing                        :  no, Arts/Entertainment              :  no
Business/Economy                :  no, Alternative Spirituality/Occult :  no
Illegal Drugs                   :  no, Education                       :  no
Cultural/Charitable Organization:  no, Financial Services              :  no
Brokerage/Trading               :  no, Online Games                    :  no
Government/Legal                :  no, Military                        :  no
Political/Activist Groups       :  no, Health                          :  no
Computers/Internet              :  no, Search Engines/Portals          :  no
Spyware/Malware Sources         :  no, Spyware Effects/Privacy Concerns:  no
Job Search/Careers              :  no, News/Media                      :  no
Personals/Dating                :  no, Reference                       :  no
Open Image/Media Search         :  no, Chat/Instant Messaging          :  no
Email                           :  no, Blogs/Newsgroups                :  no
Religion                        :  no, Social Networking               :  no
Online Storage                  :  no, Remote Access Tools             :  no
Shopping                        :  no, Auctions                        :  no
Real Estate                     :  no, Society/Lifestyle               :  no
Sexuality/Alternative Lifestyles:  no, Restaurants/Dining/Food         :  no
Sports/Recreation/Hobbies       :  no, Travel                          :  no
Vehicles                        :  no, Humor/Jokes                     :  no
Software Downloads              :  no, Pay to Surf                     :  no
Peer-to-Peer                    :  no, Streaming Media/MP3s            :  no
Proxy Avoidance                 :  no, For Kids                        :  no
Web Advertisements              :  no, Web Hosting                     :  no
Unrated                         :  no
custom active                      : yes
allow traffic to trusted hosts only:  no
allow features to trusted hosts    :  no
block activex                      : yes
block java                         : yes
block cookie                       :  no
block proxy                        : yes

No.  Trusted Host
================================================================================

No.  Forbidden Host
================================================================================

No.  Keyword
================================================================================
```

PART V
Device HA & Objects

Device HA (167)
User/Group (171)
Addresses (177)
Services (181)
Schedules (185)
AAA Server (187)
Authentication Objects (193)
Certificates (195)
ISP Accounts (201)
SSL Application (203)

22

Device HA

Use device HA and Virtual Router Redundancy Protocol (VRRP) to increase network reliability.

22.1 Device HA Overview

This section provides an overview of VRRP, VRRP groups, and synchronization.

22.1.1 Virtual Router Redundancy Protocol (VRRP) Overview

Every computer on a network may send packets to a default gateway, which can become a single point of failure. Virtual Router Redundancy Protocol (VRRP), allows you to create redundant backup gateways to ensure that the default gateway is always available.

The ZyWALL runs VRRP v2. You can only set up device HA with other ZyWALLs of the same model running the same firmware version.

22.1.2 VRRP Group Overview

In the ZyWALL, you should create a VRRP group to add one of its interfaces to a virtual router. You can add any Ethernet interface, VLAN interface, or virtual interface (created on top of Ethernet interfaces or VLAN interfaces) with a static IP address. You can only enable one VRRP group for each interface, and you can only have one active VRRP group for each virtual router.

22.1.3 Synchronization Overview

In a virtual router, backup routers do not automatically get configuration updates from the master router. In this case, the master ZyWALL router can send backup ZyWALL routers these updates. This is called synchronization.

22.2 Device HA Commands Summary

The following table identify the values required for many `device-ha` commands. Other input values are discussed with the corresponding commands.

Table 92 Input Values for device-ha Commands

LABEL	DESCRIPTION
vrrp_group_name	The name of the VRRP group. The name can consist of alphanumeric characters, the underscore, and the dash and may be up to fifteen alphanumeric characters long.

The following sections list the `device-ha` commands.

22.2.1 VRRP Group Commands

This table lists the commands for VRRP groups.

Table 93 device-ha Commands: VRRP Groups

COMMAND	DESCRIPTION
`show device-ha vrrp-group`	Displays information about all VRRP groups.
`show device-ha status`	Displays the status of active VRRP groups.
`[no] device-ha vrrp-group` *vrrp_group_name*	Creates the specified VRRP group if necessary and enters sub-command mode. The no command deletes the specified VRRP group.
`[no] vrid <1..254>`	Sets the specified VRRP group's ID to the specified VR ID. The no command clears the VR ID.
`[no] interface` *interface_name*	Specifies the interface that is part of the specified VRRP group. The no command removes the specified interface from the specified VRRP group.
`[no] role {master | backup}`	Specifies the role of the specified VRRP group in the virtual router. The no command clears the role, which makes the configuration incomplete.
`[no] priority <1..254>`	Sets the priority of the specified VRRP group in the virtual router. The no command resets the priority to 100.
`[no] preempt`	Lets the ZyWALL preempt lower-priority routers in the virtual router. The no command prevents the ZyWALL from preempting lower-priority routers.
`[no] manage-ip IP`	Specifies the IP address of the specified VRRP group when it is not the master. The no command clears the IP address.
`[no] authentication {string` *password* `| ah-md5` *password*`}`	Specifies the authentication method and password for the specified VRRP group. The no command means that the specified VRRP group does not use authentication. *password*: You may use alphanumeric characters, the underscore, and some punctuation marks (+-/ *= :; .! @$&%#~ ‘ \ ()), and it can be up to eight characters long.

Table 93 device-ha Commands: VRRP Groups (continued)

COMMAND	DESCRIPTION
`[no] description` *description*	Specifies the description for the specified VRRP group. The `no` command clears the description. *description*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`[no] activate`	Turns on the specified VRRP group. The `no` command turns off the VRRP group.

22.2.2 Synchronization Commands

This table lists the commands for synchronization. You can synchronize with other ZyWALL's of the same model that are running the same firmware version.

Table 94 device-ha Commands: Synchronization

COMMAND	DESCRIPTION
`show device-ha sync`	Displays the current settings for synchronization.
`show device-ha sync status`	Displays the current status of synchronization.
`[no] device-ha sync from {`*hostname* `|` *ip*`}`	Specifies the fully-qualified domain name (FQDN) or IP address of the ZyWALL router. Usually, this is the IP address or FQDN of the virtual router. The `no` command clears this field. *hostname*: You may up to 254 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period.
`[no] device-ha sync port <1..65535>`	Specifies the port number to use to synchronize with the specified ZyWALL router. The `no` command resets the port to 21.
`[no] device-ha sync authentication password` *password*	Specifies the password to use when synchronizing. Every router in the virtual router should use the same password. The `no` command resets the password to "1234". *password*: You can use 4-63 alphanumeric characters, underscores (_), dashes (-), and `#%^*={}:,.~` characters.
`[no] device-ha sync auto`	Specifies whether or not to automatically synchronize at regular intervals.
`[no] device-ha sync interval <1..1440>`	Specifies the number of minutes between each synchronization if the ZyWALL automatically synchronizes with the specified ZyWALL router. The `no` command resets the interval to five minutes.
`[no] device-ha sync now`	Synchronize now.

22.2.3 Link Monitoring Commands

This table lists the commands for link monitoring. Link monitoring has the master ZyWALL shut down all of its VRRP interfaces if one of its VRRP interface links goes down. This way the backup ZyWALL takes over all of the master ZyWALL's functions.

Table 95 device-ha Commands: Synchronization

COMMAND	DESCRIPTION
`device-ha link-monitoring activate`	Turns on device HA link monitoring.
`no device-ha link-monitoring`	Turns off device HA link monitoring.
`show device-ha link-monitoring`	Displays the current link monitoring setting.

22.2.4 Device HA Command Example

The following command displays whether or note link monitoring is enabled for device HA.

```
Router# configure terminal
Router(config)# show device-ha link-monitoring
link monitoring:
  active     : no
```

23

User/Group

This chapter describes how to set up user accounts, user groups, and user settings for the ZyWALL. You can also set up rules that control when users have to log in to the ZyWALL before the ZyWALL routes traffic for them.

23.1 User Account Overview

A user account defines the privileges of a user logged into the ZyWALL. User accounts are used in firewall rules and application patrol, in addition to controlling access to configuration and services in the ZyWALL.

23.1.1 User Types

There are the types of user accounts the ZyWALL uses.

Table 96 Types of User Accounts

TYPE	ABILITIES	LOGIN METHOD(S)
Admin Users		
Admin	Change ZyWALL configuration (web, CLI)	WWW, TELNET, SSH, FTP
Limited-Admin	Look at ZyWALL configuration (web, CLI) Perform basic diagnostics (CLI)	WWW, TELNET, SSH
Access Users		
User	Access network services Browse user-mode commands (CLI)	WWW, TELNET, SSH
Guest	Access network services	WWW
Ext-User	See Section 23.2 on page 172.	WWW

The default **admin** account is always authenticated locally, regardless of the authentication method setting. (See Chapter 28 on page 193 for more information about authentication methods.)

23.2 User/Group Commands Summary

The following table identify the values required for many `username/groupname` commands. Other input values are discussed with the corresponding commands.

Table 97 username/groupname Command Input Values

LABEL	DESCRIPTION
username	The name of the user (account). You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
groupname	The name of the user group. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive. It cannot be the same as the user name.

The following sections list the `username/groupname` commands.

23.2.1 User Commands

The first table lists the commands for users.

Table 98 username/groupname Commands Summary: Users

COMMAND	DESCRIPTION
`show username [username]`	Displays information about the specified user or about all users set up in the ZyWALL.
`username username nopassword user-type {admin | guest | limited-admin | user}`	Creates the specified user (if necessary), disables the password, and sets the user type for the specified user.
`username username password password user-type {admin | guest | limited-admin | user}`	Creates the specified user (if necessary); enables and sets the password; and sets the user type for the specified user. *password*: You can use 1-63 printable ASCII characters, except double quotation marks (“) and question marks (?).
`username username user-type ext-user`	Creates the specified user (if necessary) and sets the user type to **Ext-User**.
`no username username`	Deletes the specified user.
`username rename username username`	Renames the specified user (first *username*) to the specified username (second *username*).
`username username [no] description description`	Sets the description for the specified user. The `no` command clears the description. *description*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`username username [no] logon-lease-time <0..1440>`	Sets the lease time for the specified user. Set it to zero to set unlimited lease time. The `no` command sets the lease time to five minutes (regardless of the current default setting for new users).
`username username [no] logon-re-auth-time <0..1440>`	Sets the reauthorization time for the specified user. Set it to zero to set unlimited reauthorization time. The `no` command sets the reauthorization time to thirty minutes (regardless of the current default setting for new users).

23.2.2 User Group Commands

This table lists the commands for groups.

Table 99 username/groupname Commands Summary: Groups

COMMAND	DESCRIPTION
`show groupname [groupname]`	Displays information about the specified user group or about all user groups set up in the ZyWALL.
`[no] groupname groupname`	Creates the specified user group if necessary and enters sub-command mode. The no command deletes the specified user group.
`[no] description description`	Sets the description for the specified user group. The no command clears the description for the specified user group.
`[no] groupname groupname`	Adds the specified user group (second *groupname*) to the specified user group (first *groupname*).
`[no] user username`	Adds the specified user to the specified user group.
`show`	Displays information about the specified user group.
`groupname rename groupname groupname`	Renames the specified user group (first *groupname*) to the specified group-name (second *groupname*).

23.2.3 User Setting Commands

This table lists the commands for user settings, except for forcing user authentication.

Table 100 username/groupname Commands Summary: Settings

COMMAND	DESCRIPTION
`show users default-setting`	Displays information about the default settings for new users.
`users default-setting [no] logon-lease-time <0..1440>`	Sets the default lease time (in minutes) for each new user. Set it to zero to set unlimited lease time. The no command sets the default lease time to five.
`users default-setting [no] logon-re-auth-time <0..1440>`	Sets the default reauthorization time (in minutes) for each new user. Set it to zero to set unlimited reauthorization time. The no command sets the default reauthorization time to thirty.
`users default-setting [no] user-type {guest | limited-admin | user}`	Sets the default user type for each new user. The no command sets the default user type to user.
`show users retry-settings`	Displays the current retry limit settings for users.
`[no] users retry-limit`	Enables the retry limit for users. The no command disables the retry limit.
`[no] users retry-count <1..99>`	Sets the number of failed login attempts a user can have before the account or IP address is locked out for lockout-period minutes. The no command sets the retry-count to five.
`[no] users lockout-period <1..65535>`	Sets the amount of time, in minutes, a user or IP address is locked out after retry-count number of failed login attempts. The no command sets the lockout period to thirty minutes.

Table 100 username/groupname Commands Summary: Settings (continued)

COMMAND	DESCRIPTION
`show users simultaneous-logon-settings`	Displays the current settings for simultaneous logins by users.
`[no] users simultaneous-logon {administration | access} enforce`	Enables the limit on the number of simultaneous logins by users of the specified account-type. The no command disables the limit, or allows an unlimited number of simultaneous logins.
`[no] users simultaneous-logon {administration | access} limit <1..1024>`	Sets the limit for the number of simultaneous logins by users of the specified account-type. The no command sets the limit to one.
`show users update-lease-settings`	Displays whether or not access users can automatically renew their lease time.
`[no] users update-lease automation`	Lets users automatically renew their lease time. The no command prevents them from automatically renewing it.
`show users idle-detection-settings`	Displays whether or not users are automatically logged out, and, if so, how many minutes of idle time must pass before they are logged out.
`[no] users idle-detection`	Enables logging users out after a specified number of minutes of idle time. The no command disables logging them out.
`[no] users idle-detection timeout <1..60>`	Sets the number of minutes of idle time before users are automatically logged out. The no command sets the idle-detection timeout to three minutes.

23.2.3.1 User Setting Command Examples

The following commands show the current settings for the number of simultaneous logins.

```
Router# configure terminal
Router(config)# show users simultaneous-logon-settings
enable simultaneous logon limitation for administration account: yes
maximum simultaneous logon per administration account          : 1
enable simultaneous logon limitation for access account        : yes
maximum simultaneous logon per access account                  : 3
```

23.2.4 Force User Authentication Commands

This table lists the commands for forcing user authentication.

Table 101 username/groupname Commands Summary: Forcing User Authentication

COMMAND	DESCRIPTION
`force-auth policy <1..1024>`	Creates the specified condition for forcing user authentication, if necessary, and enters sub-command mode. The conditions are checked in sequence, starting at 1.
`force-auth policy append`	Creates a new condition for forcing user authentication at the end of the current list and enters sub-command mode.

Table 101 username/groupname Commands Summary: Forcing User Authentication (continued)

COMMAND	DESCRIPTION
`force-auth policy insert <1..1024>`	Creates a new condition for forcing user authentication at the specified location, renumbers the other conditions accordingly, and enters sub-command mode.
`[no] activate`	Activates the specified condition. The `no` command deactivates the specified condition.
`[no] description` *`description`*	Sets the description for the specified condition. The `no` command clears the description. *`description`*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`[no] destination {`*`address_object`* `|` *`group_name`*`}`	Sets the destination criteria for the specified condition. The `no` command removes the destination criteria, making the condition effective for all destinations.
`[no] force`	Forces users to log in to the ZyWALL if the specified condition is satisfied. The `no` command means that users do not log in to the ZyWALL.
`[no] schedule` *`schedule_name`*	Sets the time criteria for the specified condition. The `no` command removes the time criteria, making the condition effective all the time.
`[no] source {`*`address_object`* `|` *`group_name`*`}`	Sets the source criteria for the specified condition. The `no` command removes the source criteria, making the condition effective for all sources.
`show`	Displays information about the specified condition.
`force-auth policy delete <1..1024>`	Deletes the specified condition.
`force-auth policy flush`	Deletes every condition.
`force-auth policy move <1..1024> to <1..1024>`	Moves the specified condition to the specified location and renumbers the other conditions accordingly.
`show force-auth policy { <1..1024> | all }`	Displays details about the policies for forcing user authentication.

23.2.5 Additional User Commands

This table lists additional commands for users.

Table 102 username/groupname Commands Summary: Additional

COMMAND	DESCRIPTION
`show users {`*`username`* `| all | current}`	Displays information about the users logged onto the system.
`show lockout-users`	Displays users who are currently locked out.
`unlock lockout-users` *`ip`* `| console`	Unlocks the specified IP address.
`users force-logout` *`ip`* `|` *`username`*	Logs out the specified logins.

23.2.5.1 Additional User Command Examples

The following commands display the users that are currently logged in to the ZyWALL and forces the logout of all logins from a specific IP address.

```
Router# configure terminal
Router(config)# show users all
No.  Name                          Type            From            Service
     Session Time    Idle Time     Lease Timeout   Re-Auth. Timeout
=============================================================================
1    admin                         admin           192.168.1.34    http/https
     00:33:27        unlimited       23:45:18        23:26:33
2    admin                         admin           192.168.1.34    http/https
     00:14:31        unlimited       23:48:38        23:45:29
3    admin                         admin           172.23.23.83    http/https
     00:04:07        unlimited       23:58:32        23:55:53
4    admin                           admin           172.23.23.83    telnet
     00:03:30        unlimited       23:59:59        23:56:30
Router(config)# users force-logout 192.168.1.34
Logout user 'admin'(from 192.168.1.34): OK
Logout user 'admin'(from 192.168.1.34): OK
Total 2 users have been forced logout
Router(config)# show users all
No.  Name                          Type            From            Service
     Session Time    Idle Time     Lease Timeout   Re-Auth. Timeout
=============================================================================
1    admin                         admin           172.23.23.83    http/https
     00:04:31        unlimited       23:58:08        23:55:29
2    admin                           admin           172.23.23.83    telnet
     00:03:54        unlimited       24:00:00        23:56:06
```

The following commands display the users that are currently locked out and then unlocks the user who is displayed.

```
Router# configure terminal
Router(config)# show lockout-users
No.  Username Tried                  From            Lockout Time Remaining
=============================================================================
No.  From            Failed Login Attempt    Record Expired Timer
=============================================================================
1    172.23.23.60    2                       46

Router(config)# unlock lockout-users 172.23.23.60
User from 172.23.23.60 is unlocked
Router(config)# show lockout-users
No.  Username Tried                  From            Lockout Time Remaining
=============================================================================
No.  From            Failed Login Attempt    Record Expired Timer
=============================================================================
```

24

Addresses

This chapter describes how to set up addresses and address groups for the ZyWALL.

24.1 Address Overview

Address objects can represent a single IP address or a range of IP addresses. Address groups are composed of address objects and other address groups.

Address objects and address groups are used in dynamic routes, firewall rules, application patrol, content filtering, and VPN connection policies. For example, addresses are used to specify where content restrictions apply in content filtering. Please see the respective sections for more information about how address objects and address groups are used in each one.

Address groups are composed of address objects and address groups. The sequence of members in the address group is not important.

24.2 Address Commands Summary

The following table describes the values required for many address object and address group commands. Other values are discussed with the corresponding commands.

Table 103 Input Values for Address Commands

LABEL	DESCRIPTION
object_name	The name of the address. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
group_name	The name of the address group. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following sections list the address object and address group commands.

24.2.1 Address Object Commands

This table lists the commands for address objects.

Table 104 address-object Commands: Address Objects

COMMAND	DESCRIPTION
`show address-object [object_name]`	Displays information about the specified address or all the addresses.
`address-object object_name {ip | ip_range | ip_subnet}`	Creates the specified address using the specified parameters. *ip_range*: <1..255>.<0..255>.<0..255>.<1..255>-<1..255>.<0..255>.<0..255>.<1..255> *ip_subnet*: <1..255>.<0..255>.<0..255>.<0..255>/<1..32>
`no address-object object_name`	Deletes the specified address.
`address-object rename object_name object_name`	Renames the specified address (first *object_name*) to the second *object_name*.

24.2.1.1 Address Object Command Examples

The following commands create the three types of address objects and then delete one.

```
Router# configure terminal
Router(config)# address-object A0 192.168.1.1
Router(config)# address-object A1 192.168.1.1-192.168.1.20
Router(config)# address-object A2 192.168.1.0/24
Router(config)# show address-object
Object name                     Type    Address                         Ref.
=================================================================
A0                              HOST    192.168.1.1                       0
A1                              RANGE   192.168.1.1-192.168.1.20      0
A2                              SUBNET 192.168.1.0/24                  0
Router(config)# no address-object A2
Router(config)# show address-object
Object name                     Type    Address                         Ref.
=================================================================
A0                              HOST    192.168.1.1                       0
A1                              RANGE   192.168.1.1-192.168.1.20      0
```

24.2.2 Address Group Commands

This table lists the commands for address groups.

Table 105 object-group Commands: Address Groups

COMMAND	DESCRIPTION
`show object-group address [group_name]`	Displays information about the specified address group or about all address groups.
`[no] object-group address group_name`	Creates the specified address group if necessary and enters sub-command mode. The no command deletes the specified address group.
`[no] address-object object_name`	Adds the specified address to the specified address group. The no command removes the specified address from the specified group.

Table 105 object-group Commands: Address Groups (continued)

COMMAND	DESCRIPTION
`[no] object-group group_name`	Adds the specified address group (second *group_name*) to the specified address group (first *group_name*). The no command removes the specified address group from the specified address group.
`[no] description description`	Sets the description to the specified value. The no command clears the description. *description*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`object-group address rename group_name group_name`	Renames the specified address group from the first *group_name* to the second *group_name*.

24.2.2.1 Address Group Command Examples

The following commands create three address objects A0, A1, and A2 and add A1 and A2 to address group RD.

```
Router# configure terminal
Router(config)# address-object A0 192.168.1.1
Router(config)# address-object A1 192.168.1.2-192.168.2.20
Router(config)# address-object A2 192.168.3.0/24
Router(config)# object-group address RD
Router(group-address)# address-object A1
Router(group-address)# address-object A2
Router(group-address)# exit
Router(config)# show object-group address
Group name                      Reference
Description
================================================================================
TW_TEAM                         5

RD                              0

Router(config)# show object-group address RD
Object/Group name               Type   Reference
================================================================================
A1                              Object 1
A2                              Object 1
```

25

Services

Use service objects to define TCP applications, UDP applications, and ICMP messages. You can also create service groups to refer to multiple service objects in other features.

25.1 Services Overview

See the appendices in the web configurator's User Guide for a list of commonly-used services.

25.2 Services Commands Summary

The following table describes the values required for many service object and service group commands. Other values are discussed with the corresponding commands.

Table 106 Input Values for Service Commands

LABEL	DESCRIPTION
group_name	The name of the service group. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
object_name	The name of the service. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following sections list the service object and service group commands.

25.2.1 Service Object Commands

The first table lists the commands for service objects.

Table 107 service-object Commands: Service Objects

COMMAND	DESCRIPTION
`show service-object [`*`object_name`*`]`	Displays information about the specified service or about all the services.
`no service-object` *`object_name`*	Deletes the specified service.
`service-object` *`object_name`* `{tcp | udp} {eq <1..65535> | range <1..65535> <1..65535>}`	Creates the specified TCP service or UDP service using the specified parameters.

Table 107 service-object Commands: Service Objects (continued)

COMMAND	DESCRIPTION
`service-object object_name icmp icmp_value`	Creates the specified ICMP message using the specified parameters. *icmp_value*: <0..255> | alternate-address | conversion-error | echo | echo-reply | information-reply | information-request | mask-reply | mask-request | mobile-redirect | parameter-problem | redirect | router-advertisement | router-solicitation | source-quench | time-exceeded | timestamp-reply | timestamp-request | unreachable
`service-object object_name protocol <1..255>`	Creates the specified user-defined service using the specified parameters.
`service-object rename object_name object_name`	Renames the specified service from the first *object_name* to the second *object_name*.

25.2.1.1 Service Object Command Examples

The following commands create four services, displays them, and then removes one of them.

```
Router# configure terminal
Router(config)# service-object TELNET tcp eq 23
Router(config)# service-object FTP tcp range 20 21
Router(config)# service-object ICMP_ECHO icmp echo
Router(config)# service-object MULTICAST protocol 2
Router(config)# show service-object
Object name                 Protocol         Minmum port  Maxmum port  Ref.
=================================================================TELNET
TCP               23            23             0
FTP                          TCP              20             21             0
ICMP_ECHO                   ICMP              0              0              0
MULTICAST                   2                 0              0              0
Router(config)# no service-object ICMP_ECHO
Router(config)# show service-object
Object name                 Protocol         Minmum port  Maxmum port  Ref.
=================================================================TELNET
TCP               23            23             0
FTP                          TCP              20             21             0
MULTICAST                   2                 0              0              0
```

25.2.2 Service Group Commands

The first table lists the commands for service groups.

Table 108 object-group Commands: Service Groups

COMMAND	DESCRIPTION
`show object-group service group_name`	Displays information about the specified service group.
`[no] object-group service group_name`	Creates the specified service group if necessary and enters sub-command mode. The no command removes the specified service group.
`[no] service-object object_name`	Adds the specified service to the specified service group. The no command removes the specified service from the specified group.

Table 108 object-group Commands: Service Groups (continued)

COMMAND	DESCRIPTION
`[no] object-group group_name`	Adds the specified service group (second *group_name*) to the specified service group (first *group_name*). The no command removes the specified service group from the specified service group.
`[no] description description`	Sets the description to the specified value. The no command removes the description. *description*: You can use alphanumeric and ()+/:=?!*#@$_%- characters, and it can be up to 60 characters long.
`object-group service rename group_name group_name`	Renames the specified service group from the first *group_name* to the second *group_name*.

25.2.2.1 Service Group Command Examples

The following commands create service ICMP_ECHO, create service group SG1, and add ICMP_ECHO to SG1.

```
Router# configure terminal
Router(config)# service-object ICMP_ECHO icmp echo
Router(config)# object-group service SG1
Router(group-service)# service-object ICMP_ECHO
Router(group-service)# exit
Router(config)# show service-object ICMP_ECHO
Object name                    Protocol        Minmum port  Maxmum port  Ref.
==============================================================================
ICMP_ECHO                        ICMP             8            8            1
Router(config)# show object-group service SG1
Object/Group name                Type   Reference
==============================================================================
ICMP_ECHO                        Object 1
```

26

Schedules

Use schedules to set up one-time and recurring schedules for policy routes, firewall rules, application patrol, and content filtering.

26.1 Schedule Overview

The ZyWALL supports two types of schedules: one-time and recurring. One-time schedules are effective only once, while recurring schedules usually repeat. Both types of schedules are based on the current date and time in the ZyWALL.

Schedules are based on the current date and time in the ZyWALL.

One-time schedules begin on a specific start date and time and end on a specific stop date and time. One-time schedules are useful for long holidays and vacation periods.

Recurring schedules begin at a specific start time and end at a specific stop time on selected days of the week (Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday). Recurring schedules always begin and end in the same day. Recurring schedules are useful for defining the workday and off-work hours.

26.2 Schedule Commands Summary

The following table describes the values required for many schedule commands. Other values are discussed with the corresponding commands.

Table 109 Input Values for Schedule Commands

LABEL	DESCRIPTION
object_name	The name of the schedule. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
time	24-hour time, hours and minutes; <0..23>:<0..59>.

The following table lists the schedule commands.

Table 110 schedule Commands

COMMAND	DESCRIPTION
`show schedule-object`	Displays information about the schedules in the ZyWALL.
`no schedule-object` *`object_name`*	Deletes the schedule object.
`schedule-object` *`object_name date time date time`*	Creates or updates a one-time schedule. *`date`*: yyyy-mm-dd date format; yyyy-<01..12>-<01..31>
`schedule-object` *`object_name time time`* [*`day`*] [*`day`*] [*`day`*] [*`day`*] [*`day`*] [*`day`*] [*`day`*]	Creates or updates a recurring schedule. *`day`*: 3-character day of the week; sun | mon | tue | wed | thu | fri | sat

26.2.1 Schedule Command Examples

The following commands create recurring schedule SCHEDULE1 and one-time schedule SCHEDULE2 and then delete SCHEDULE1.

```
Router# configure terminal
Router(config)# schedule-object SCHEDULE1 11:00 12:00 mon tue wed thu fri
Router(config)# schedule-object SCHEDULE2 2006-07-29 11:00 2006-07-31 12:00
Router(config)# show schedule-object
Object name                    Type      Start/End                        Ref.
=============================================================================
SCHEDULE1                       Recurring 11:00/12:00 ===MonTueWedThuFri=== 0
SCHEDULE2                       Once      2006-07-29 11:00/2006-07-31 12:00 0

Router(config)# no schedule-object SCHEDULE1
Router(config)# show schedule-object
Object name                    Type      Start/End                        Ref.
=============================================================================
SCHEDULE2                       Once      2006-07-29 11:00/2006-07-31 12:00 0
```

27

AAA Server

This chapter introduces and shows you how to configure the ZyWALL to use external authentication servers.

27.1 AAA Server Overview

You can use an AAA (Authentication, Authorization, Accounting) server to provide access control to your network.

The following lists the types of authentication server the ZyWALL supports.

- Local user database

  The ZyWALL uses the built-in local user database to authenticate administrative users logging into the ZyWALL's web configurator or network access users logging into the network through the ZyWALL. You can also use the local user database to authenticate VPN users.
- Directory Service (LDAP/AD)

  LDAP (Lightweight Directory Access Protocol)/AD (Active Directory) is a directory service that is both a directory and a protocol for controlling access to a network. The directory consists of a database specialized for fast information retrieval and filtering activities. You create and store user profile and login information on the external server.
- RADIUS

  RADIUS (Remote Authentication Dial-In User Service) authentication is a popular protocol used to authenticate users by means of an external or built-in RADIUS server. RADIUS authentication allows you to validate a large number of users from a central location.

27.2 Authentication Server Command Summary

This section describes the commands for authentication server settings.

27.2.1 ad-server Commands

The following table lists the `ad-server` commands you use to set the default AD server.

Table 111 ad-server Commands

COMMAND	DESCRIPTION
`show ad-server`	Displays current AD server settings.
`[no] ad-server basedn` *basedn*	Sets a base distinguished name (DN) for the default AD server. A base DN identifies an AD directory. The no command clears this setting.
`[no] ad-server binddn` *binddn*	Sets the user name the ZyWALL uses to log into the default AD server. The no command clears this setting.
`[no] ad-server cn-identifier` *uid*	Sets the unique common name (cn) to identify a record. The no command clears this setting.
`[no] ad-server host` *ad_server*	Sets the AD server address. Enter the IP address (in dotted decimal notation) or the domain name. The no command clears this setting.
`[no] ad-server password` *password*	Sets the bind password. The no command clears this setting.
`[no] ad-server port` *port_no*	Sets the AD port number. Enter a number between 1 and 65535. The default is 389. The no command clears this setting.
`[no] ad-server search-time-limit` *time*	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The no command clears this setting.
`[no] ad-server ssl`	Enables the ZyWALL to establish a secure connection to the AD server. The no command disables this feature.

27.2.2 ldap-server Commands

The following table lists the `ldap-server` commands you use to set the default LDAP server.

Table 112 ldap-server Commands

COMMAND	DESCRIPTION
`show ldap-server`	Displays current LDAP server settings.
`[no] ldap-server basedn` *basedn*	Sets a base distinguished name (DN) for the default LDAP server. A base DN identifies an LDAP directory. The no command clears this setting.
`[no] ldap-server binddn` *binddn*	Sets the user name the ZyWALL uses to log into the default LDAP server. The no command clears this setting.
`[no] ldap-server cn-identifier` *uid*	Sets the unique common name (cn) to identify a record. The no command clears this setting.
`[no] ldap-server host` *ldap_server*	Sets the LDAP server address. Enter the IP address (in dotted decimal notation) or the domain name. The no command clears this setting.
`[no] ldap-server password` *password*	Sets the bind password. The no command clears this setting.
`[no] ldap-server port` *port_no*	Sets the LDAP port number. Enter a number between 1 and 65535. The default is 389. The no command clears this setting.

Table 112 ldap-server Commands (continued)

COMMAND	DESCRIPTION
`[no] ldap-server search-time-limit` *time*	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The no command clears this setting.
`[no] ldap-server ssl`	Enables the ZyWALL to establish a secure connection to the LDAP server. The no command disables this feature.

27.2.3 radius-server Commands

The following table lists the `radius-server` commands you use to set the default RADIUS server.

Table 113 radius-server Commands

COMMAND	DESCRIPTION
`show radius-server`	Displays the default RADIUS server settings.
`[no] radius-server host` *radius_server* `auth-port` *auth_port*	Sets the RADIUS server address and service port number. Enter the IP address (in dotted decimal notation) or the domain name of a RADIUS server. The no command clears the settings.
`[no] radius-server key` *secret*	Sets a password (up to 15 alphanumeric characters) as the key to be shared between the RADIUS server and the ZyWALL. The no command clears this setting.
`[no] radius-server timeout` *time*	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The no command clears this setting.

27.2.4 radius-server Command Example

The following example sets the secret key and timeout period of the default RADIUS server (172.23.10.100) to “87643210” and 80 seconds.

```
Router# configure terminal
Router(config)# radius-server host 172.23.10.100 auth-port 1812
Router(config)# radius-server key 876543210
Router(config)# radius-server timeout 80
Router(config)# show radius-server
host               : 172.23.10.100
authentication port: 1812
key                : 876543210
timeout            : 80
Router(config)#
```

27.2.5 aaa group server ad Commands

The following table lists the `aaa group server ad` commands you use to configure a group of AD servers.

Table 114 aaa group server ad Commands

COMMAND	DESCRIPTION
`clear aaa group server ad [group-name]`	Deletes all AD server groups or the specified AD server group. Note: You can NOT delete a server group that is currently in use.
`show aaa group server ad group-name`	Displays the specified AD server group settings.
`[no] aaa group server ad group-name`	Sets a descriptive name for an AD server group. Use this command to enter the sub-command mode. The no command deletes the specified server group.
`aaa group server ad rename group-name group-name`	Changes the descriptive name for an AD server group.
`aaa group server ad group-name`	
`[no] server basedn basedn`	Sets the base DN to point to the AD directory on the AD server. The no command clears this setting.
`[no] server binddn binddn`	Sets the user name the ZyWALL uses to log into the default AD server. The no command clears this setting.
`[no] server cn-identifier uid`	Sets the user name the ZyWALL uses to log into the default AD server. The no command clears this setting.
`[no] server host ad_server`	Sets the AD server address. Enter the IP address (in dotted decimal notation) or the domain name of an AD server to add to this group. The no command clears this setting.
`[no] server password password`	Sets the bind password (up to 15 characters). The no command clears this setting.
`[no] server port port_no`	Sets the AD port number. Enter a number between 1 and 65535. The default is 389. The no command clears this setting.
`[no] server search-time-limit time`	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The no command clears this setting and set this to the default setting of 5 seconds.
`[no] server ssl`	Enables the ZyWALL to establish a secure connection to the AD server. The no command disables this feature.

27.2.6 aaa group server ldap Commands

The following table lists the `aaa group server ldap` commands you use to configure a group of LDAP servers.

Table 115 aaa group server ldap Commands

COMMAND	DESCRIPTION
`clear aaa group server ldap [group-name]`	Deletes all LDAP server groups or the specified LDAP server group. Note: You can NOT delete a server group that is currently in use.
`show aaa group server ldap group-name`	Displays the specified LDAP server group settings.
`[no] aaa group server ldap group-name`	Sets a descriptive name for an LDAP server group. Use this command to enter the sub-command mode. The no command deletes the specified server group.
`aaa group server ldap rename group-name group-name`	Changes the descriptive name for an LDAP server group.
`aaa group server ldap group-name`	
`[no] server basedn basedn`	Sets the base DN to point to the LDAP directory on the LDAP server. The no command clears this setting.
`[no] server binddn binddn`	Sets the user name the ZyWALL uses to log into the default LDAP server. The no command clears this setting.
`[no] server cn-identifier uid`	Sets the user name the ZyWALL uses to log into the default LDAP server. The no command clears this setting.
`[no] server host ldap_server`	Sets the LDAP server address. Enter the IP address (in dotted decimal notation) or the domain name of an LDAP server to add to this group. The no command clears this setting.
`[no] server password password`	Sets the bind password (up to 15 characters). The no command clears this setting.
`[no] server port port_no`	Sets the LDAP port number. Enter a number between 1 and 65535. The default is 389. The no command clears this setting.
`[no] server search-time-limit time`	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The no command clears this setting and set this to the default setting of 5 seconds.
`[no] server ssl`	Enables the ZyWALL to establish a secure connection to the LDAP server. The no command disables this feature.

27.2.7 aaa group server radius Commands

The following table lists the `aaa group server radius` commands you use to configure a group of RADIUS servers.

Table 116 aaa group server radius Commands

COMMAND	DESCRIPTION
`clear aaa group server radius` *group-name*	Deletes all RADIUS server groups or the specified RADIUS server group. Note: You can NOT delete a server group that is currently in use.
`show aaa group server radius` *group-name*	Displays the specified RADIUS server group settings.
`[no] aaa group server radius` *group-name*	Sets a descriptive name for the RADIUS server group. The `no` command deletes the specified server group.
`aaa group server radius rename` {*group-name-old*} *group-name-new*	Sets the server group name.
`aaa group server radius` *group-name*	
`[no] server host` *radius_server*	Sets the RADIUS server address. Enter the IP address (in dotted decimal notation) or the domain name of a RADIUS server to add to this server group. The `no` command clears this setting.
`[no] server key` *secret*	Sets a password (up to 15 alphanumeric characters) as the key to be shared between the RADIUS server(s) and the ZyWALL. The `no` command clears this setting.
`[no] server timeout` *time*	Sets the search timeout period (in seconds). Enter a number between 1 and 300. The `no` command clears this setting and set this to the default setting of 5 seconds.

27.2.8 aaa group server Command Example

The following example creates a RADIUS server group with two members and sets the secret key to “12345678” and the timeout to 100 seconds.

```
Router# configure terminal
Router(config)# aaa group server radius RADIUSGroup1
Router(group-server-radius)# server host 192.168.1.100 auth-port 1812
Router(group-server-radius)# server host 172.23.22.100 auth-port 1812
Router(group-server-radius)# server key 12345678
Router(group-server-radius)# server timeout 100
Router(group-server-radius)# exit
Router(config)# show aaa group server radius
No.  Name                          Reference
==========================================================================
1    RADIUSGroup1                  0
Router(config)#
```

28

Authentication Objects

This chapter shows you how to select different authentication methods for user authentication using the AAA servers or the internal user database.

28.1 Authentication Objects Overview

After you have created the AAA server objects, you can specify the authentication objects (containing the AAA server information) that the ZyWALL uses to authenticate users (using VPN or managing through HTTP/HTTPS).

28.2 aaa authentication Commands

The following table lists the `aaa authentication` commands you use to configure an authentication profile.

Table 117 aaa authentication Commands

COMMAND	DESCRIPTION
`aaa authentication rename` *`profile-name-old profile-name-new`*	Changes the profile name. *`profile-name`*: You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`clear aaa authentication` *`profile-name`*	Deletes all authentication profiles or the specified authentication profile. Note: You can NOT delete a profile that is currently in use.
`show aaa authentication {`*`group-name`*`|default}`	Displays the specified authentication server profile settings.

Table 117 aaa authentication Commands (continued)

COMMAND	DESCRIPTION
[no] aaa authentication {*profile-name*}	Sets a descriptive name for the authentication profile. The no command deletes a profile.
aaa authentication *profile-name*[no] *member*1 [*member2*] [*member3*]	Sets the profile to use the authentication method(s) in the order specified. *member* = group ad, group ldap, group radius, or local. Note: You must specify at least one member for each profile. Each type of member can only be used once in a profile. Use the no command to clear the authentication method settings for the profile.

28.2.1 aaa authentication Command Example

The following example creates an authentication profile to authentication users using the LDAP server group and then the local user database.

```
Router# configure terminal
Router(config)# aaa authentication LDAPuser group ldap local
Router(config)# show aaa authentication LDAPuser
No.  Method
================================================================================
=
0    ldap
1    local
Router(config)#
```

29

Certificates

This chapter explains how to use the **Certificates**.

29.1 Certificates Overview

The ZyWALL can use certificates (also called digital IDs) to authenticate users. Certificates are based on public-private key pairs. A certificate contains the certificate owner's identity and public key. Certificates provide a way to exchange public keys for use in authentication.

A Certification Authority (CA) issues certificates and guarantees the identity of each certificate owner. There are commercial certification authorities like CyberTrust or VeriSign and government certification authorities. You can use the ZyWALL to generate certification requests that contain identifying information and public keys and then send the certification requests to a certification authority.

29.2 Certificate Commands

This section describes the commands for configuring certificates.

29.3 Certificates Commands Input Values

The following table explains the values you can input with the `certificate` commands.

Table 118 Certificates Commands Input Values

LABEL	DESCRIPTION
certificate_name	The name of a certificate. You can use up to 31 alphanumeric and ;'~!@#$%^&()_+[]{}',.=- characters.
cn_address	A common name IP address identifies the certificate's owner. Type the IP address in dotted decimal notation.
cn_domain_name	A common name domain name identifies the certificate's owner. The domain name is for identification purposes only and can be any string. The domain name can be up to 255 characters. You can use alphanumeric characters, the hyphen and periods.
cn_email	A common name e-mail address identifies the certificate's owner. The e-mail address is for identification purposes only and can be any string. The e-mail address can be up to 63 characters. You can use alphanumeric characters, the hyphen, the @ symbol, periods and the underscore.

Table 118 Certificates Commands Input Values (continued)

LABEL	DESCRIPTION
organizational_unit	Identify the organizational unit or department to which the certificate owner belongs. You can use up to 31 characters. You can use alphanumeric characters, the hyphen and the underscore.
organization	Identify the company or group to which the certificate owner belongs. You can use up to 31 characters. You can use alphanumeric characters, the hyphen and the underscore.
country	Identify the nation where the certificate owner is located. You can use up to 31 characters. You can use alphanumeric characters, the hyphen and the underscore.
key_length	Type a number to determine how many bits the key should use (512 to 2048). The longer the key, the more secure it is. A longer key also uses more PKI storage space.
password	When you have the ZyWALL enroll for a certificate immediately online, the certification authority may want you to include a key (password) to identify your certification request. Use up to 31 of the following characters. a-zA-Z0-9;|`~!@#$%^&*()_+\{}':,./<>=-
ca_name	When you have the ZyWALL enroll for a certificate immediately online, you must have the certification authority's certificate already imported as a trusted certificate. Specify the name of the certification authority's certificate. It can be up to 31 alphanumeric and ;'~!@#$%^&()_+[]{}',.=- characters.
url	When you have the ZyWALL enroll for a certificate immediately online, enter the IP address (or URL) of the certification authority server. You can use up to 511 of the following characters. a-zA-Z0-9'()+,/:.=?;!*#@$_%-

29.4 Certificates Commands Summary

The following table lists the commands that you can use to display and manage the ZyWALL's summary list of certificates and certification requests. You can also create certificates or certification requests. Use the `configure terminal` command to enter the configuration mode to be able to use these commands.

Table 119 ca Commands Summary

COMMAND	DESCRIPTION
`ca enroll cmp name` *certificate_name* `cn-type {ip cn` *cn_address*`|fqdn cn` *cn_domain_name*`|mail cn` *cn_email*`} [ou` *organizational_unit*`] [o` *organization*`] [c` *country*`] key-type {rsa|dsa} key-len` *key_length* `num <0..99999999> password` *password* `ca` *ca_name* `url` *url*`;`	Enrolls a certificate with a CA using Certificate Management Protocol (CMP). The certification authority may want you to include a reference number and key (password) to identify your certification request.
`ca enroll scep name` *certificate_name* `cn-type {ip cn` *cn_address*`|fqdn cn` *cn_domain_name*`|mail cn` *cn_email*`} [ou` *organizational_unit*`] [o` *organization*`] [c` *country*`] key-type {rsa|dsa} key-len` *key_length* `password` *password* `ca` *ca_name* `url` *url*	Enrolls a certificate with a CA using Simple Certificate Enrollment Protocol (SCEP). The certification authority may want you to include a key (password) to identify your certification request.

Table 119 ca Commands Summary (continued)

COMMAND	DESCRIPTION
ca generate pkcs10 name *certificate_name* cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length*	Generates a PKCS#10 certification request.
ca generate pkcs12 name *name* password *password*	Generates a PKCS#12 certificate.
ca generate x509 name *certificate_name* cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length*	Generates a self-signed x509 certificate.
ca rename category {local|remote} *old_name new_name*	Renames a local (my certificates) or remote (trusted certificates) certificate.
ca validation *remote_certificate*	Enters the sub command mode for validation of certificates signed by the specified remote (trusted) certificates.
cdp {activate|deactivate}	Has the ZyWALL check (or not check) incoming certificates that are signed by this certificate against a Certificate Revocation List (CRL) or an OCSP server. You also need to configure the OSCP or LDAP server details.
ldap {activate|deactivate}	Has the ZyWALL check (or not check) incoming certificates that are signed by this certificate against a Certificate Revocation List (CRL) on a LDAP (Lightweight Directory Access Protocol) directory server.
ldap ip {*ip*|*fqdn*} port <1..65535> [id *name* password *password*] [deactivate]	Sets the validation configuration for the specified remote (trusted) certificate where the directory server uses LDAP. *ip*: Type the IP address (in dotted decimal notation) or the domain name of the directory server. The domain name can use alphanumeric characters, periods and hyphens. Up to 255 characters. port: Specify the LDAP server port number. You must use the same server port number that the directory server uses. 389 is the default server port number for LDAP. The ZyWALL may need to authenticate itself in order to access the CRL directory server. Type the login name (up to 31 characters) from the entity maintaining the server (usually a certification authority). You can use alphanumeric characters, the underscore and the dash. Type the password (up to 31 characters) from the entity maintaining the CRL directory server (usually a certification authority). You can use the following characters: a-zA-Z0-9;|`~!@#$%^&*()_+\{}':,./<>=-
ocsp {activate|deactivate}	Has the ZyWALL check (or not check) incoming certificates that are signed by this certificate against a directory server that uses OCSP (Online Certificate Status Protocol).

Table 119 ca Commands Summary (continued)

COMMAND	DESCRIPTION
ocsp url *url* [id *name* password *password*] [deactivate]	Sets the validation configuration for the specified remote (trusted) certificate where the directory server uses OCSP. *url*: Type the protocol, IP address and pathname of the OCSP server. name: The ZyWALL may need to authenticate itself in order to access the OCSP server. Type the login name (up to 31 characters) from the entity maintaining the server (usually a certification authority). You can use alphanumeric characters, the underscore and the dash. password: Type the password (up to 31 characters) from the entity maintaining the OCSP server (usually a certification authority). You can use the following characters: a-zA-Z0-9;|`~!@#$%^&*()_+\{}':,./<>=-
no ca category {local|remote} *certificate_name*	Deletes the specified local (my certificates) or remote (trusted certificates) certificate.
no ca validation *name*	Removes the validation configuration for the specified remote (trusted) certificate.
show ca category {local|remote} name *certificate_name* certpath	Displays the certification path of the specified local (my certificates) or remote (trusted certificates) certificate.
show ca category {local|remote} [name *certificate_name* format {text|pem}]	Displays a summary of the certificates in the specified category (local for my certificates or remote for trusted certificates) or the details of a specified certificate.
show ca validation name *name*	Displays the validation configuration for the specified remote (trusted) certificate.
show ca spaceusage	Displays the storage space in use by certificates.

29.5 Certificates Commands Examples

The following example creates a self-signed X.509 certificate with IP address 10.0.0.58 as the common name. It uses the RSA key type with a 512 bit key. Then it displays the list of local certificates. Finally it deletes the pkcs12request certification request.

```
Router# configure terminal
Router(config)# ca generate x509 name test_x509 cn-type ip cn 10.0.0.58 key-
type rsa key-len 512
Router(config)# show ca category local
certificate: default
  type: SELF
  subject: CN=ZyWALL-1050_Factory_Default_Certificate
  issuer: CN=ZyWALL-1050_Factory_Default_Certificate
  status: VALID
  ID: ZyWALL-1050_Factory_Default_Certificate
    type: EMAIL
  valid from: 2003-01-01 00:38:30
  valid to: 2022-12-27 00:38:30
certificate: test
  type: REQ
  subject: CN=1.1.1.1
  issuer: none
  status: VALID
  ID: 1.1.1.1
    type: IP
  valid from: none
  valid to: none
certificate: pkcs12request
  type: REQ
  subject: CN=1.1.1.2
  issuer: none
  status: VALID
  ID: 1.1.1.2
    type: IP
  valid from: none
  valid to: none
certificate: test_x509
  type: SELF
  subject: CN=10.0.0.58
  issuer: CN=10.0.0.58
  status: VALID
  ID: 10.0.0.58
    type: IP
  valid from: 2006-05-29 10:26:08
  valid to: 2009-05-28 10:26:08
Router(config)# no ca category local pkcs12request
```

30

ISP Accounts

Use ISP accounts to manage Internet Service Provider (ISP) account information for PPPoE/PPTP interfaces.

30.1 ISP Accounts Overview

An ISP account is a profile of settings for Internet access using PPPoE or PPTP.

30.2 ISP Account Commands Summary

The following table describes the values required for many ISP account commands. Other values are discussed with the corresponding commands.

Table 120 Input Values for ISP Account Commands

LABEL	DESCRIPTION
profile_name	The name of the ISP account. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table lists the ISP account commands.

Table 121 account Commands

COMMAND	DESCRIPTION
`show account [pppoe` *profile_name* `| pptp` *profile_name*`]`	Displays information about the specified account(s).
`[no] account {pppoe | pptp}` *profile_name*	Creates a new ISP account with name *profile_name* if necessary and enters sub-command mode. The no command deletes the specified ISP account.
`[no] user` *username*	Sets the username for the specified ISP account. The no command clears the username. *username*: You can use alphanumeric, underscores (_), dashes (-), and /@$ characters, and it can be up to 30 characters long.
`[no] password` *password*	Sets the password for the specified ISP account. The no command clears the password. *password*: You can use up to 63 printable ASCII characters. Spaces are not allowed.
`[no] authentication {chap-pap | chap | pap | mschap | mschap-v2}`	Sets the authentication for the specified ISP account. The no command sets the authentication to chap-pap.

Table 121 account Commands (continued)

COMMAND	DESCRIPTION
`[no] compression {on | off}`	Turns compression on or off for the specified ISP account. The no command turns off compression.
`[no] idle <0..360>`	Sets the idle timeout for the specified ISP account. The no command sets the idle timeout to zero.
`[no] service-name {ip | hostname | service_name}`	Sets the service name for the specified PPPoE ISP account. The no command clears the service name. *hostname*: You may up to 63 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period. *service_name*: You can use 1-253 alphanumeric characters, underscores (_), dashes (-), and @$./ characters.
`[no] server ip`	Sets the PPTP server for the specified PPTP ISP account. The no command clears the server name.
`[no] encryption {nomppe | mppe-40 | mppe-128}`	Sets the encryption for the specified PPTP ISP account. The no command sets the encryption to nomppe.
`[no] connection-id connection_id`	Sets the connection ID for the specified PPTP ISP account. The no command clears the connection ID. *connection_id*: You can use up to 31 alphanumeric characters, underscores (_), dashes (-), and colons (:).

31

SSL Application

This chapter describes how to configure SSL application objects for use in SSL VPN.

31.1 SSL Application Overview

Configure an SSL application object to specify a service and a corresponding IP address of the server on the local network. You can apply one or more SSL application objects in the **VPN** > **SSL VPN** screen for a user account/user group.

31.1.1 SSL Application Object Commands

This table lists the commands for creating SSL application objects. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 122 SSL Application Object Commands

COMMAND	DESCRIPTION
`show sslvpn application [application_object]`	Displays SSL VPN application objects.
`[no] sslvpn application application_object`	Enters the sub-command mode to create an SSL VPN application object.
`server-type {file-sharing | owa | web-server} url URL [entry-point entry_point]`	Specify the type of service for this SSL application. `file-sharing`: create a file share application for VPN SSL. owa: (Outlook Web Access) to allow users to access e-mails, contacts, calenders via an Microsoft Outlook-like interface using supported web browsers. The ZyWALL supports one OWA object. `web-server`: to allow access to the specified web site hosted on the local network. `url`: Enter the fully qualified domain name (FQDN) or IP address of the application server. You must enter the “http://” or “https://” prefix. Remote users are restricted to access only files in this directory. For example, if you enter “\remote\” in this field, emote users can only access files in the “remote” directory. *`entry-point`*: optional. Specify the name of the directory or file on the local server as the home page or home directory on the user screen.

Table 122 SSL Application Object Commands

COMMAND	DESCRIPTION
`server-type file-sharing` *`share-path folder`*	Specifies the IP address, domain name or NetBIOS name (computer name) of the file server and the name of the share to which you want to allow user access. Enter the path in one of the following formats. "\\<IP address>\<share name>" "\\<domain name>\<share name>" "\\<computer name>\<share name>" For example, if you enter "\\my-server\Tmp", this allows remote users to access all files and/or folders in the "\Tmp" share on the "my-server" computer.
`no server-type`	Remove the type of service configuration for this SSL application.
`[no] webpage-encrypt`	Turn on web encrypt to prevent users from saving the web content.

31.1.2 SSL Application Command Examples

The following commands create and display a server-type SSL application object named ZW5 for a web server at IP address 192.168.1.12.

```
Router(config)# sslvpn application ZW5
Router(sslvpn application)# server-type web-server url http://192.168.1.12
Router(sslvpn application)# exit
Router(config)# show sslvpn application
SSL Application: ZW5
  Server Type: web-server
  URL: http://192.168.1.12
  Entry Point:
  Encrypted URL: ~aHR0cDovLzE5Mi4xNjguMS4xMi8=/
  Web Page Encryption: yes
  Reference: 1
```

PART VI
System

System (207)
System Remote Management (211)

32 System

This chapter provides information on the system screens.

32.1 System Overview

The system screens can help you configure general ZyWALL information, the system time and the console port connection speed for a terminal emulation program. The screens also allow you to configure DNS settings and determine which services/protocols can access which ZyWALL zones (if any) from which computers.

32.2 Host Name Commands

The following table describes the commands available for the hostname and domain name. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 123 Command Summary: Host Name

COMMAND	DESCRIPTION
`[no] domainname` *`domain_name`*	Sets the domain name. The `no` command removes the domain name. *`domain_name`*: This name can be up to 254 alphanumeric characters long. Spaces are not allowed, but dashes “-” and underscores “_” are accepted.
`[no] hostname` *`hostname`*	Sets a descriptive name to identify your ZyWALL. The `no` command removes the host name.
`show fqdn`	Displays the fully qualified domain name.

32.3 Time and Date

For effective scheduling and logging, the ZyWALL system time must be accurate. The ZyWALL’s Real Time Chip (RTC) keeps track of the time and date. There is also a software mechanism to set the time manually or get the current time and date from an external server.

32.3.1 Date/Time Commands

The following table describes the commands available for date and time setup. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 124 Command Summary: Date/Time

COMMAND	DESCRIPTION
`clock date` *yyyy-mm-dd* `time` *hh:mm:ss*	Sets the new date in year, month and day format manually and the new time in hour, minute and second format.
`[no] clock daylight-saving`	Enables daylight saving. The no command disables daylight saving.
`[no] clock saving-interval begin {apr|aug|dec|feb|jan|jul|jun|mar|may|nov|oct|sep} {1|2|3|4|last} {fri|mon|sat|sun|thu|tue|wed}` *hh:mm* `end {apr|aug|dec|feb|jan|jul|jun|mar|may|nov|oct|sep} {1|2|3|4|last} {fri|mon|sat|sun|thu|tue|wed}` *hh:mm* `offset`	Configures the day and time when Daylight Saving Time starts and ends. The no command removes the day and time when Daylight Saving Time starts and ends. offset: a number from 1 to 5.5 (by 0.5 increments)
`clock time` *hh:mm:ss*	Sets the new time in hour, minute and second format.
`[no] clock time-zone {-|+`*hh*`}`	Sets your time zone. The no command removes time zone settings.
`[no] ntp`	Saves your date and time and time zone settings and updates the data and time every 24 hours. The no command stops updating the data and time every 24 hours.
`[no] ntp server {`*fqdn*`|`*w.x.y.z*`}`	Sets the IP address or URL of your NTP time server. The no command removes time server information.
`ntp sync`	Gets the time and date from a NTP time server.
`show clock date`	Displays the current date of your ZyWALL.
`show clock status`	Displays your time zone and daylight saving settings.
`show clock time`	Displays the current time of your ZyWALL.
`show ntp server`	Displays time server settings.

32.4 Console Port Speed

This section shows you how to set the console port speed when you connect to the ZyWALL via the console port using a terminal emulation program. The following table describes the console port commands. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 125 Command Summary: Console Port Speed

COMMAND	DESCRIPTION
`[no] console baud` *`baud_rate`*	Sets the speed of the console port. The `no` command resets the console port speed to the default (`115200`). *`baud_rate`*: 9600, 19200, 38400, 57600 or 115200.
`show console`	Displays console port speed.

32.5 DNS Overview

DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. The DNS server is extremely important because without it, you must know the IP address of a machine before you can access it.

32.5.1 DNS Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 126 Input Values for General DNS Commands

LABEL	DESCRIPTION
`address_object`	The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`interface_name`	The name of the interface. Ethernet interface: ge*x*, *x* = 1 - N, where N equals the highest numbered Ethernet interface for your ZyWALL model. virtual interface on top of Ethernet interface: ge*x*:*y*, *x* = 1 - N, *y* = 1 - 12 VLAN interface: vlan*x*, *x* = 0 - 15 virtual interface on top of VLAN interface: vlan*x*:*y*, *x* = 0 - 15, *y* = 1 - 12 bridge interface: br*x*, *x* = 0 - 11 virtual interface on top of bridge interface: br*x*:*y*, *x* = 0 - 11, *y* = 1 - 12 PPPoE/PPTP interface: ppp*x*, *x* = 0 - 11

The following table describes the commands available for DNS. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 127 Command Summary: DNS

COMMAND	DESCRIPTION
`[no] ip dns server a-record` *`fqdn w.x.y.z`*	Sets an A record that specifies the mapping of a fully qualified domain name (FQDN) to an IP address. The `no` command deletes an A record.
`ip dns server cache-flush`	Clears the DNS cache.

Table 127 Command Summary: DNS (continued)

COMMAND	DESCRIPTION
[no] ip dns server mx-record *domain_name* {*w.x.y.z*|*fqdn*}	Sets a MX record that specifies a mail server that is responsible for handling the mail for a particular domain. The no command deletes a MX record.
ip dns server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*address_object*} action {accept|deny}	Sets a service control rule for DNS requests.
ip dns server rule move <1..32> to <1..32>	Changes the number of a service control rule.
[no] ip dns server zone-forwarder {<1..32>|append|insert <1..32>} {*domain_name*|*} {interface *interface_name* |user-defined *w.x.y.z*} [private]	Sets a zone forwarder record that specifies a DNS server's IP address. Use private if the ZyWALL connects to the DNS server through a VPN tunnel. The no command deletes a zone forwarder record.
ip dns server zone-forwarder move <1..32> to <1..32>	Changes the index number of a zone forwarder record.
no ip dns server rule <1..32>	Deletes a service control rule.
show ip dns server cache	Displays all DNS cache entries.
show ip dns server database	Displays all configured records.
show ip dns server status	Displays whether this service is enabled or not.

32.5.2 DNS Command Example

This command sets an A record that specifies the mapping of a fully qualified domain name (www.abc.com) to an IP address (210.17.2.13).

```
Router# configure terminal
Router(config)# ip dns server a-record www.abc.com 210.17.2.13
```

33

System Remote Management

This chapter shows you how to determine which services/protocols can access which ZyWALL zones (if any) from which computers.

To allow the ZyWALL to be accessed from a specified computer using a service, make sure you do not have a service control rule or to-ZyWALL rule to block that traffic.

33.1 Remote Management Overview

You may manage your ZyWALL from a remote location via:

- Internet (WAN only)
- LAN only
- ALL (LAN&WAN&DMZ)
- DMZ only

To disable remote management of a service, deselect **Enable** in the corresponding service screen.

33.1.1 Remote Management Limitations

Remote management will not work when:

1. You have disabled that service in the corresponding screen.
2. The accepted IP address in the **Service Control** table does not match the client IP address. If it does not match, the ZyWALL will disconnect the session immediately.
3. There is a firewall rule that blocks it.

33.1.2 System Timeout

There is a lease timeout for administrators. The ZyWALL automatically logs you out if the management session remains idle for longer than this timeout period. The management session does not time out when a statistics screen is polling.

Each user is also forced to log in the ZyWALL for authentication again when the reauthentication time expires.

33.2 HTTP/HTTPS Commands

The following table identifies the values required for many of these commands. Other input values are discussed with the corresponding commands.

Table 128 Input Values for General HTTP/HTTPS Commands

LABEL	DESCRIPTION
address_object	The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
zone_object	The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.

The following table describes the commands available for HTTP/HTTPS. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 129 Command Summary: HTTP/HTTPS

COMMAND	DESCRIPTION
`[no] ip http authentication` *auth_method*	Sets an authentication method used by the HTTP/HTTPS server. The `no` command resets the authentication method used by the HTTP/HTTPS server to the factory default (`default`). *auth_method*: The name of the authentication method. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`[no] ip http port <1..65535>`	Sets the HTTP service port number. The `no` command resets the HTTP service port number to the factory default (80).
`[no] ip http secure-port <1..65535>`	Sets the HTTPS service port number. The `no` command resets the HTTPS service port number to the factory default (443).
`[no] ip http secure-server`	Enables HTTPS access to the ZyWALL web configurator. The `no` command disables HTTPS access to the ZyWALL web configurator.
`[no] ip http secure-server auth-client`	Sets the client to authenticate itself to the HTTPS server. The `no` command sets the client not to authenticate itself to the HTTPS server.
`[no] ip http secure-server cert` *certificate_name*	Specifies a certificate used by the HTTPS server. The `no` command resets the certificate used by the HTTPS server to the factory default (`default`). *certificate_name*: The name of the certificate. You can use up to 31 alphanumeric and ;'~!@#$%^&()_+[]{}',.=- characters.
`[no] ip http secure-server force-redirect`	Redirects all HTTP connection requests to a HTTPS URL. The `no` command disables forwarding HTTP connection requests to a HTTPS URL.

Table 129 Command Summary: HTTP/HTTPS (continued)

COMMAND	DESCRIPTION
ip http secure-server table {admin|user} rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny}	Sets a service control rule for HTTPS service.
ip http secure-server table {admin|user} rule move <1..32> to <1..32>	Changes the index number of a HTTPS service control rule.
[no] ip http server	Allows HTTP access to the ZyWALL web configurator. The no command disables HTTP access to the ZyWALL web configurator.
ip http server table {admin|user} rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny}	Sets a service control rule for HTTP service.
ip http server table {admin|user} rule move <1..32> to <1..32>	Changes the number of a HTTP service control rule.
no ip http secure-server table {admin|user} rule <1..32>	Deletes a service control rule for HTTPS service.
no ip http server table {admin|user} rule <1..32>	Deletes a service control rule for HTTP service.
show ip http server status	Displays HTTP settings.
show ip http server secure status	Displays HTTPS settings.

33.2.1 HTTP/HTTPS Command Examples

This following example adds a service control rule that allowed an administrator from the computers with the IP addresses matching the Marketing address object to access the WAN zone using HTTP service.

```
Router# configure terminal
Router(config)# ip http server table admin rule append access-group
Marketing zone WAN action accept
```

This command sets an authentication method used by the HTTP/HTTPS server to authenticate the client(s).

```
Router# configure terminal
Router(config)# ip http authentication Example
```

This following example sets a certificate named MyCert used by the HTTPS server to authenticate itself to the SSL client.

```
Router# configure terminal
Router(config)# ip http secure-server cert MyCert
```

33.3 SSH

Unlike Telnet or FTP, which transmit data in clear text, SSH (Secure Shell) is a secure communication protocol that combines authentication and data encryption to provide secure encrypted communication between two hosts over an unsecured network.

33.3.1 SSH Implementation on the ZyWALL

Your ZyWALL supports SSH versions 1 and 2 using RSA authentication and four encryption methods (AES, 3DES, Archfour and Blowfish). The SSH server is implemented on the ZyWALL for remote management on port 22 (by default).

33.3.2 Requirements for Using SSH

You must install an SSH client program on a client computer (Windows or Linux operating system) that is used to connect to the ZyWALL over SSH.

33.3.3 SSH Commands

The following table describes the commands available for SSH. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 130 Command Summary: SSH

COMMAND	DESCRIPTION
`[no] ip ssh server`	Allows SSH access to the ZyWALL CLI. The `no` command disables SSH access to the ZyWALL CLI.
`[no] ip ssh server cert` *`certificate_name`*	Sets a certificate whose corresponding private key is to be used to identify the ZyWALL for SSH connections. The `no` command resets the certificate used by the SSH server to the factory default (`default`). *`certificate_name`*: The name of the certificate. You can use up to 31 alphanumeric and ;'~!@#$%^&()_+[]{}',.=- characters.
`[no] ip ssh server port <1..65535>`	Sets the SSH service port number. The `no` command resets the SSH service port number to the factory default (22).
`ip ssh server rule {<1..32>|append|insert <1..32>} access-group {ALL|`*`address_object`*`} zone {ALL|`*`zone_object`*`} action {accept|deny}`	Sets a service control rule for SSH service. *`address_object`*: The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive. *`zone_object`*: The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`ip ssh server rule move <1..32> to <1..32>`	Changes the index number of a SSH service control rule.

Table 130 Command Summary: SSH (continued)

COMMAND	DESCRIPTION
`[no] ip ssh server v1`	Enables remote management using SSH v1. The no command stops the ZyWALL from using SSH v1.
`no ip ssh server rule <1..32>`	Deletes a service control rule for SSH service.
`show ip ssh server status`	Displays SSH settings.

33.3.4 SSH Command Examples

This command sets a service control rule that allowed the computers with the IP addresses matching the specified address object to access the specified zone using SSH service.

```
Router# configure terminal
Router(config)# ip ssh server rule 2 access-group Marketing zone WAN action
accept
```

This command sets a certificate (Default) to be used to identify the ZyWALL.

```
Router# configure terminal
Router(config)# ip ssh server cert Default
```

33.4 Telnet

You can configure your ZyWALL for remote Telnet access.

33.5 Telnet Commands

The following table describes the commands available for Telnet. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 131 Command Summary: Telnet

COMMAND	DESCRIPTION
`[no] ip telnet server`	Allows Telnet access to the ZyWALL CLI. The no command disables Telnet access to the ZyWALL CLI.
`[no] ip telnet server port <1..65535>`	Sets the Telnet service port number. The no command resets the Telnet service port number back to the factory default (23).

Table 131 Command Summary: Telnet (continued)

COMMAND	DESCRIPTION
`ip telnet server rule {<1..32>|append|insert <1..32>} access-group {ALL|address_object} zone {ALL|zone_object} action {accept|deny}`	Sets a service control rule for Telnet service. *address_object*: The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive. *zone_object*: The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`ip telnet server rule move <1..32> to <1..32>`	Changes the index number of a service control rule.
`no ip telnet server rule <1..32>`	Deletes a service control rule for Telnet service.
`show ip telnet server status`	Displays Telnet settings.

33.5.1 Telnet Commands Examples

This command sets a service control rule that allowed the computers with the IP addresses matching the specified address object to access the specified zone using Telnet service.

```
Router# configure terminal
Router(config)# ip telnet server rule 11 access-group RD zone LAN action
-> accept
```

This command displays Telnet settings.

```
Router# configure terminal
Router(config)# show ip telnet server status
active     : yes
port       : 23
service control:
No.  Zone                        Address                     Action
==========================================================================
Router(config)#
```

33.6 Configuring FTP

You can upload and download the ZyWALL's firmware and configuration files using FTP. To use this feature, your computer must have an FTP client.

33.6.1 FTP Commands

The following table describes the commands available for FTP. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 132 Command Summary: FTP

COMMAND	DESCRIPTION
`[no] ip ftp server`	Allows FTP access to the ZyWALL. The `no` command disables FTP access to the ZyWALL.
`[no] ip ftp server cert` *`certificate_name`*	Sets a certificate to be used to identify the ZyWALL. The `no` command resets the certificate used by the FTP server to the factory default.
`[no] ip ftp server port <1..65535>`	Sets the FTP service port number. The `no` command resets the FTP service port number to the factory default (21).
`[no] ip ftp server tls-required`	Allows FTP access over TLS. The `no` command disables FTP access over TLS.
`ip ftp server rule {<1..32>|append|insert <1..32>} access-group {ALL|`*`address_object`*`} zone {ALL|`*`zone_object`*`} action {accept|deny}`	Sets a service control rule for FTP service. *`address_object`*: The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive. *`zone_object`*: The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`ip ftp server rule move <1..32> to <1..32>`	Changes the index number of a service control rule.
`no ip ftp server rule <1..32>`	Deletes a service control rule for FTP service.
`show ip ftp server status`	Displays FTP settings.

33.6.2 FTP Commands Examples

This command sets a service control rule that allowed the computers with the IP addresses matching the specified address object to access the specified zone using FTP service.

```
Router# configure terminal
Router(config)# ip ftp server rule 4 access-group Sales zone WAN action
accept
```

This command displays FTP settings.

```
Router# configure terminal
Router(config)# show ip ftp server status
active     : yes
port       : 21
certificate: default
TLS        : no
service control:
No.  Zone                      Address                       Action
=================================================================
```

33.7 SNMP

Simple Network Management Protocol is a protocol used for exchanging management information between network devices. Your ZyWALL supports SNMP agent functionality, which allows a manager station to manage and monitor the ZyWALL through the network. The ZyWALL supports SNMP version one (SNMPv1) and version two (SNMPv2c).

33.7.1 Supported MIBs

The ZyWALL supports MIB II that is defined in RFC-1213 and RFC-1215. The ZyWALL also supports private MIBs (zywall.mib and zyxel-zywall-ZLD-Common.mib) to collect information about CPU and memory usage and VPN total throughput. The focus of the MIBs is to let administrators collect statistical data and monitor status and performance. You can download the ZyWALL's MIBs from www.zyxel.com.

33.7.2 SNMP Traps

The ZyWALL will send traps to the SNMP manager when any one of the following events occurs:

Table 133 SNMP Traps

OBJECT LABEL	OBJECT ID	DESCRIPTION
Cold Start	1.3.6.1.6.3.1.1.5.1	This trap is sent when the ZyWALL is turned on or an agent restarts.
linkDown	1.3.6.1.6.3.1.1.5.3	This trap is sent when the Ethernet link is down.
linkUp	1.3.6.1.6.3.1.1.5.4	This trap is sent when the Ethernet link is up.
authenticationFailure	1.3.6.1.6.3.1.1.5.5	This trap is sent when an SNMP request comes from non-authenticated hosts.

33.7.3 SNMP Commands

The following table describes the commands available for SNMP. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 134 Command Summary: SNMP

COMMAND	DESCRIPTION
`[no] snmp-server`	Allows SNMP access to the ZyWALL. The `no` command disables SNMP access to the ZyWALL.
`[no] snmp-server community` *`community_string`* `{ro|rw}`	Enters up to 64 characters to set the password for read-only (ro) or read-write (rw) access. The `no` command resets the password for read-only (`ro`) or read-write (`rw`) access to the default.
`[no] snmp-server contact` *`description`*	Sets the contact information (of up to 60 characters) for the person in charge of the ZyWALL. The `no` command removes the contact information for the person in charge of the ZyWALL.
`[no] snmp-server enable {informs|traps}`	Enables all SNMP notifications (informs or traps). The `no` command disables all SNMP notifications (informs or traps).
`[no] snmp-server host {`*`w.x.y.z`*`}` `[`*`community_string`*`]`	Sets the IP address of the host that receives the SNMP notifications. The `no` command removes the host that receives the SNMP notifications.
`[no] snmp-server location` *`description`*	Sets the geographic location (of up to 60 characters) for the ZyWALL. The `no` command removes the geographic location for the ZyWALL.
`[no] snmp-server port <1..65535>`	Sets the SNMP service port number. The `no` command resets the SNMP service port number to the factory default (`161`).
`snmp-server rule {<1..32>|append|insert <1..32>} access-group {ALL|`*`address_object`*`} zone {ALL|`*`zone_object`*`} action {accept|deny}`	Sets a service control rule for SNMP service. *`address_object`*: The name of the IP address (group) object. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive. *`zone_object`*: The name of the zone. You may use 1-31 alphanumeric characters, underscores(_), or dashes (-), but the first character cannot be a number. This value is case-sensitive.
`snmp-server rule move <1..32> to <1..32>`	Changes the index number of a service control rule.
`no snmp-server rule <1..32>`	Deletes a service control rule for SNMP service.
`show snmp status`	Displays SNMP Settings.

33.7.4 SNMP Commands Examples

The following command sets a service control rule that allowed the computers with the IP addresses matching the specified address object to access the specified zone using SNMP service.

```
Router# configure terminal
Router(config)# snmp-server rule 11 access-group Example zone WAN action
accept
```

The following command sets the password (secret) for read-write (`rw`) access.

```
Router# configure terminal
Router(config)# snmp-server community secret rw
```

The following command sets the IP address of the host that receives the SNMP notifications to 172.23.15.84 and the password (sent with each trap) to qwerty.

```
Router# configure terminal
Router(config)# snmp-server host 172.23.15.84 qwerty
```

33.8 ICMP Filter

The `ip icmp-filter` commands are obsolete. See Chapter 14 on page 93 to configure firewall rules for ICMP traffic going to the ZyWALL to discard or reject ICMP packets destined for the ZyWALL.

33.9 Dial-in Management

Connect an external serial modem to the **DIAL BACKUP** port (or **AUX** port depending on your model) to provide a remote management connection in case the ZyWALL's other WAN connections are down. This is like an auxiliary interface, except it is used for management connections coming into the ZyWALL instead of as a backup WAN connection.

33.9.1 AT Command Strings

For regular telephone lines, the default Dial string tells the modem that the line uses tone dialing. `ATDT` is the command for a switch that requires tone dialing. If your switch requires pulse dialing, change the string to `ATDP`.

33.9.2 DTR Signal

The majority of WAN devices default to hanging up the current call when the DTR (Data Terminal Ready) signal is dropped by the DTE. When the Drop DTR When Hang Up check box is selected, the ZyWALL uses this hardware signal to force the WAN device to hang up, in addition to issuing the drop command ATH.

33.9.3 Response Strings

The response strings tell the ZyWALL the tags, or labels, immediately preceding the various call parameters sent from the serial modem. The response strings have not been standardized; please consult the documentation of your serial modem to find the correct tags.

33.9.4 Dial-in Management Commands

The following table describes the commands available for dial-in management. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 135 Command Summary: Dial-in Management

COMMAND	DESCRIPTION
`dial-in`	Enters sub-command mode.
`[no] activate`	Turns dial-in management on. The `no` command turns it off.
`[no] answer-rings`	Sets how many times the ZyWALL lets the incoming dial-in management session ring before processing it. The `no` command sets it to one.
`[no] description` *`description`*	Specifies the description for the dial-in management connection. The `no` command clears the description. *`description`*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 60 characters long.
`[no] initial-string` *`initial_string`*	Specifies the initial string of the auxiliary interface. The `no` command removes the initial string. *`initial_string`*: You can use up to 64 characters. Semicolons (;) and backslashes (\) are not allowed.
`[no] mute`	Stops the external serial modem from making audible sounds during a dial-in management session. The `no` command turns the sounds back on.
`[no] port-speed {9600 | 19200 | 38400 | 57600 | 115200}`	Specifies the baud rate of the auxiliary interface. The `no` command sets the baud rate to 115200.
`show dial-in`	Displays dial-in management settings.

33.9.4.1 Dial-in Management Command Examples

The following commands show you how to set up dial-in management with the following parameters: active, port speed 57600, initial-string ATDT, and description “I am dial-in management”.

```
Router# configure terminal
Router(config)# dial-in
Router(config-dial-in)# activate
Router(config-dial-in)# port-speed 57600
Router(config-dial-in)# initial-string ATDT
Router(config-dial-in)# description I am dial-in management
Router(config-dial-in)# exit
```

33.10 Vantage CNM

Vantage CNM (Centralized Network Management) is a browser-based global management solution that allows an administrator from any location to easily configure, manage, monitor and troubleshoot ZyXEL devices located worldwide. See the Vantage CNM User's Guide for details.

If you allow your ZyWALL to be managed by the Vantage CNM server, then you should not do any configurations directly to the ZyWALL (using either the web configurator or commands) without notifying the Vantage CNM administrator.

33.10.1 Vantage CNM Commands

The following table describes the commands available for dial-in management. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 136 Command Summary: Vantage CNM

COMMAND	DESCRIPTION
`[no] cnm-agent manager` *`url`*	Sets up the URL of the Vantage server that the ZyWALL registers with. Include the full HTTPS or HTTP URL. For example, https://1.2.3.4/vantage/TR069.
`[no] cnm-agent activate`	Turns management through Vantage CNM on or off.
`cnm-agent keepalive interval <10..90>`	Sets the keepalive interval.
`[no] cnm-agent periodic-inform activate`	Turns the periodic inform on or off.
`cnm-agent periodic-inform interval <10..86400>`	Sets the periodic inform interval.
`cnm-agent trigger-inform [interval]`	initiates a TR069 connection to the server. You can also specify the interval for the inform messages.
`[no] cnm-agent auth activate`	Enables or disables authentication of the server when using HTTPS.
`show cnm-agent configuration`	Displays the Vantage CNM configuration.

33.10.1.1 Vantage CNM Command Examples

The following example turns on Vantage CNM management and sets the ZyWALL to register with a server at https://1.2.3.4/vantage/TR069.

```
Router# configure terminal
Router(config)# cnm-agent activate
Router(config)# cnm-agent manager https://1.2.3.4/vantage/TR069
Router(config)# show cnm-agent configuration
Activate: YES
ACS URL: https://1.2.3.4/vantage/TR069
Keepalive: ENABLE
Keepalive Interval: 60
Periodic Inform: DISABLE
Periodic Inform Interval: 3600
Custom IP: NO
HTTPS Authentication: NO
Vantage Certificate: zw1050.cer456
```

33.11 Language Commands

Use the `language` commands to display what language the web configurator is using or change it. You must use the `configure terminal` command to enter the configuration mode before you can use these commands.

Table 137 Command Summary: Language

COMMAND	DESCRIPTION
`language <English | Simplified_Chinese | Traditional_Chinese>`	Specifies the language used in the web configurator screens.
`show language {setting | all}`	`setting` displays the current display language in the web configurator screens. `all` displays the available languages.

PART VII
Maintenance and Index

File Manager (227)
Logs (245)
Reports and Reboot (251)
Diagnostics (255)
Maintenance Tools (257)
Command Index (327)

34

File Manager

This chapter covers how to work with the ZyWALL's firmware, certificates, configuration files, custom IDP signatures, packet trace results, shell scripts and temporary files.

34.1 File Directories

The ZyWALL stores files in the following directories.

Table 138 FTP File Transfer Notes

DIRECTORY	FILE TYPE	FILE NAME EXTENSION
A	Firmware (upload only)	bin
cert	Non-PKCS#12 certificates	cer
conf	Configuration files	conf
idp	IDP custom signatures	rules
packet_trace	Packet trace results (download only)	
script	Shell scripts	.zysh
tmp	Temporary system maintenance files and crash dumps for technical support use (download only)	

A. After you log in through FTP, you do not need to change directories in order to upload the firmware.

34.2 Configuration Files and Shell Scripts Overview

You can store multiple configuration files and shell script files on the ZyWALL.

When you apply a configuration file, the ZyWALL uses the factory default settings for any features that the configuration file does not include. Shell scripts are files of commands that you can store on the ZyWALL and run when you need them. When you run a shell script, the ZyWALL only applies the commands that it contains. Other settings do not change.

You can edit configuration files or shell scripts in a text editor and upload them to the ZyWALL. Configuration files use a .conf extension and shell scripts use a .zysh extension.

These files have the same syntax, which is also identical to the way you run CLI commands manually. An example is shown below.

Figure 23 Configuration File / Shell Script: Example

```
# enter configuration mode
configure terminal
# change administrator password
username admin password 4321 user-type admin
# configure ge3
interface ge3
ip address 172.23.37.240 255.255.255.0
ip gateway 172.23.37.254 metric 1
exit
# create address objects for remote management / to-ZyWALL firewall rules
# use the address group in case we want to open up remote management later
address-object TW_SUBNET 172.23.37.0/24
object-group address TW_TEAM
address-object TW_SUBNET
exit
# enable Telnet access (not enabled by default, unlike other services)
ip telnet server
# open WAN-to-ZyWALL firewall for TW_TEAM for remote management
firewall WAN ZyWALL insert 4
sourceip TW_TEAM
service TELNET
action allow
exit
write
```

While configuration files and shell scripts have the same syntax, the ZyWALL applies configuration files differently than it runs shell scripts. This is explained below.

Table 139 Configuration Files and Shell Scripts in the ZyWALL

Configuration Files (.conf)	Shell Scripts (.zysh)
• Resets to default configuration. • Goes into CLI **Configuration** mode. • Runs the commands in the configuration file.	• Goes into CLI **Privilege** mode. • Runs the commands in the shell script.

You have to run the example in Table 23 on page 228 as a shell script because the first command is run in **Privilege** mode. If you remove the first command, you have to run the example as a configuration file because the rest of the commands are executed in **Configuration** mode. (See Section 1.5 on page 20 for more information about CLI modes.)

34.2.1 Comments in Configuration Files or Shell Scripts

In a configuration file or shell script, use “#” or “!” as the first character of a command line to have the ZyWALL treat the line as a comment.

Your configuration files or shell scripts can use “exit” or a command line consisting of a single “!” to have the ZyWALL exit sub command mode.

"exit" or "!" must follow sub commands if it is to make the ZyWALL exit sub command mode.

Line 3 in the following example exits sub command mode.

```
interface ge1
ip address dhcp
!
```

Lines 1 and 3 in the following example are comments and line 4 exits sub command mode.

```
!
interface ge1
# this interface is a DHCP client
!
```

Lines 1 and 2 are comments. Line 5 exits sub command mode.

```
! this is from Joe
# on 2006/06/05
interface ge1
ip address dhcp
!
```

34.2.2 Errors in Configuration Files or Shell Scripts

When you apply a configuration file or run a shell script, the ZyWALL processes the file line-by-line. The ZyWALL checks the first line and applies the line if no errors are detected. Then it continues with the next line. If the ZyWALL finds an error, it stops applying the configuration file or shell script and generates a log.

You can change the way a configuration file or shell script is applied. Include `setenv stop-on-error off` in the configuration file or shell script. The ZyWALL ignores any errors in the configuration file or shell script and applies all of the valid commands. The ZyWALL still generates a log for any errors.

34.2.3 ZyWALL Configuration File Details

You can store multiple configuration files on the ZyWALL. You can also have the ZyWALL use a different configuration file without the ZyWALL restarting.

- When you first receive the ZyWALL, it uses the **system-default.conf** configuration file of default settings.

- When you change the configuration, the ZyWALL creates a **startup-config.conf** file of the current configuration.
- The ZyWALL checks the **startup-config.conf** file for errors when it restarts. If there is an error in the **startup-config.conf** file, the ZyWALL copies the **startup-config.conf** configuration file to the **startup-config-bad.conf** configuration file and tries the existing **lastgood.conf** configuration file.
- When the ZyWALL reboots, if the **startup-config.conf** file passes the error check, the ZyWALL keeps a copy of the **startup-config.conf** file as the **lastgood.conf** configuration file for you as a back up file. If you upload and apply a configuration file with an error, you can apply **lastgood.conf** to return to a valid configuration.

34.2.4 Configuration File Flow at Restart

If there is not a **startup-config.conf** when you restart the ZyWALL (whether through a management interface or by physically turning the power off and back on), the ZyWALL uses the **system-default.conf** configuration file with the ZyWALL's default settings.

If there is a **startup-config.conf**, the ZyWALL checks it for errors and applies it. If there are no errors, the ZyWALL uses it and copies it to the **lastgood.conf** configuration file. If there is an error, the ZyWALL generates a log and copies the **startup-config.conf** configuration file to the **startup-config-bad.conf** configuration file and tries the existing **lastgood.conf** configuration file. If there isn't a **lastgood.conf** configuration file or it also has an error, the ZyWALL applies the **system-default.conf** configuration file.

You can change the way the **startup-config.conf** file is applied. Include the `setenv-startup stop-on-error off` command. The ZyWALL ignores any errors in the **startup-config.conf** file and applies all of the valid commands. The ZyWALL still generates a log for any errors.

34.3 File Manager Commands Input Values

The following table explains the values you can input with the file manager commands.

Table 140 File Manager Command Input Values

LABEL	DESCRIPTION
file_name	The name of a file. Use up to 25 characters (including a-zA-Z0-9;'~!@#$%^&()_+[]{}',.=-).

34.4 File Manager Commands Summary

The following table lists the commands that you can use for file management.

Table 141 File Manager Commands Summary

COMMAND	DESCRIPTION
`apply /conf/file_name.conf`	Has the ZyWALL use a specific configuration file. You must still use the `write` command to save your configuration changes to the flash (“non-volatile” or “long term”) memory.
`copy {/cert | /conf | /idp | /packet_trace | /script | /tmp}file_name-a.conf {/cert | /conf | /idp | /packet_trace | /script | /tmp}/file_name-b.conf`	Saves a duplicate of a file on the ZyWALL from the source file name to the target file name. Specify the directory and file name of the file that you want to copy and the directory and file name to use for the duplicate. Always copy the file into the same directory.
`copy running-config startup-config`	Saves your configuration changes to the flash (“non-volatile” or “long term”) memory. The ZyWALL immediately uses configuration changes made via commands, but if you do not use this command or the write command, the changes will be lost when the ZyWALL restarts.
`copy running-config /conf/file_name.conf`	Saves a duplicate of the configuration file that the ZyWALL is currently using. You specify the file name to which to copy.
`delete {/cert | /conf | /idp | /packet_trace | /script | /tmp}/file_name`	Removes a file. Specify the directory and file name of the file that you want to delete.
`dir {/cert | /conf | /idp | /packet_trace | /script | /tmp}`	Displays the list of files saved in the specified directory.
`rename {/cert | /conf | /idp | /packet_trace | /script | /tmp}/old-file_name {/cert | /conf | /idp | /packet_trace | /script | /tmp}/new-file_name`	Changes the name of a file. Specify the directory and file name of the file that you want to rename. Then specify the directory again followed by the new file name.
`rename /script/old-file_name /script/new-file_name`	Changes the name of a shell script.
`run /script/file_name.zysh`	Has the ZyWALL execute a specific shell script file. You must still use the `write` command to save your configuration changes to the flash (“non-volatile” or “long term”) memory.
`show running-config`	Displays the settings of the configuration file that the system is using.
`setenv-startup stop-on-error off`	Has the ZyWALL ignore any errors in the startup-config.conf file and apply all of the valid commands.
`show setenv-startup`	Displays whether or not the ZyWALL is set to ignore any errors in the startup-config.conf file and apply all of the valid commands.
`write`	Saves your configuration changes to the flash (“non-volatile” or “long term”) memory. The ZyWALL immediately uses configuration changes made via commands, but if you do not use the `write` command, the changes will be lost when the ZyWALL restarts.

34.5 File Manager Command Example

This example saves a back up of the current configuration before applying a shell script file.

```
Router(config)# copy running-config /conf/backup.conf
Router(config)# run /script/vpn_setup.zysh
```

34.6 FTP File Transfer

You can use FTP to transfer files to and from the ZyWALL for advanced maintenance and support.

34.6.1 Command Line FTP File Upload

1. Connect to the ZyWALL.
2. Enter “bin” to set the transfer mode to binary.
3. You can upload the firmware after you log in through FTP. To upload other files, use “cd” to change to the corresponding directory.
4. Use “put” to transfer files from the computer to the ZyWALL.[1] For example:
   In the conf directory, use "put config.conf today.conf” to upload the configuration file (config.conf) to the ZyWALL and rename it “today.conf”.
   "put 1.00(XL.0).bin” transfers the firmware (1.00(XL.0).bin) to the ZyWALL.

The firmware update can take up to five minutes. Do not turn off or reset the ZyWALL while the firmware update is in progress! If you lose power during the firmware upload, you may need to refer to Section 34.8 on page 235 to recover the firmware.

34.6.2 Command Line FTP Configuration File Upload Example

The following example transfers a configuration file named tomorrow.conf from the computer and saves it on the ZyWALL as next.conf.

Uploading a custom signature file named "custom.rules”, overwrites all custom signatures on the ZyWALL.

1. When you upload a custom signature, the ZyWALL appends it to the existing custom signatures stored in the "custom.rules” file.

Figure 24 FTP Configuration File Upload Example

```
C:\>ftp 192.168.1.1
Connected to 192.168.1.1.
220 FTP Server (ZyWALL) [192.168.1.1]
User (192.168.1.1:(none)): admin
331 Password required for admin.
Password:
230 User admin logged in.
ftp> cd conf
250 CWD command successful
ftp> bin
200 Type set to I
ftp> put tomorrow.conf next.conf
200 PORT command successful
150 Opening BINARY mode data connection for next.conf
226-Post action ok!!
226 Transfer complete.
ftp: 20231 bytes sent in 0.00Seconds 20231000.00Kbytes/sec.
```

34.6.3 Command Line FTP File Download

1. Connect to the ZyWALL.
2. Enter “bin” to set the transfer mode to binary.
3. Use “cd” to change to the directory that contains the files you want to download.
4. Use “dir” or “ls” if you need to display a list of the files in the directory.
5. Use "get” to download files. For example:

   “get vpn_setup.zysh vpn.zysh” transfers the vpn_setup.zysh configuration file on the ZyWALL to your computer and renames it “vpn.zysh.”

34.6.4 Command Line FTP Configuration File Download Example

The following example gets a configuration file named today.conf from the ZyWALL and saves it on the computer as current.conf.

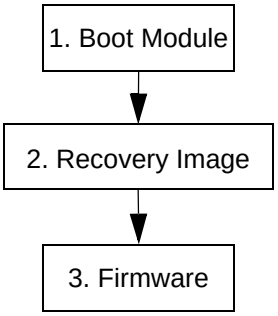
Figure 25 FTP Configuration File Download Example

```
C:\>ftp 192.168.1.1
Connected to 192.168.1.1.
220 FTP Server (ZyWALL) [192.168.1.1]
User (192.168.1.1:(none)): admin
331 Password required for admin.
Password:
230 User admin logged in.
ftp> bin
200 Type set to I
ftp> cd conf
250 CWD command successful
ftp> get today.conf current.conf
200 PORT command successful
150 Opening BINARY mode data connection for conf/today.conf
(20220 bytes)
226 Transfer complete.
ftp: 20220 bytes received in 0.03Seconds 652.26Kbytes/sec.
```

34.7 ZyWALL File Usage at Startup

The ZyWALL uses the following files at system startup.

Figure 26 ZyWALL File Usage at Startup



1. The boot module performs a basic hardware test. You cannot restore the boot module if it is damaged. The boot module also checks and loads the recovery image. The ZyWALL notifies you if the recovery image is damaged.
2. The recovery image checks and loads the firmware. The ZyWALL notifies you if the firmware is damaged.

34.8 Notification of a Damaged Recovery Image or Firmware

The ZyWALL's recovery image and/or firmware could be damaged, for example by the power going off during a firmware upgrade. This section describes how the ZyWALL notifies you of a damaged recovery image or firmware file. Use this section if your device has stopped responding for an extended period of time and you cannot access or ping it. Note that the ZyWALL does not respond while starting up. It takes less than five minutes to start up with the default configuration, but the start up time increases with the complexity of your configuration.

1. Use a console cable and connect to the ZyWALL via a terminal emulation program (such as HyperTerminal). Your console session displays the ZyWALL's startup messages. If you cannot see any messages, check the terminal emulation program's settings (see Section 1.2.1 on page 14) and restart the ZyWALL.
2. The system startup messages display followed by "Press any key to enter debug mode within 3 seconds."

Do not press any keys at this point. Wait to see what displays next.

Figure 27 System Startup Stopped

```
BootModule Version: V1.08 | 05/05/2006 11:42:55
DRAM: Size = 510 Mbytes
DRAM POST: Testing:  522240K OK
DRAM Test SUCCESS !

Kernel Version: V2.4.27-XL-2006-05-29 | 2006-05-29 15:23:46
ZLD Version: VZW1050_10_DailyBuild_New | 2006-05-29 15:18:37

Press any key to enter debug mode within 3 seconds.
.....................................................
```

3. If the console session displays "Invalid Firmware", or "Invalid Recovery Image", or the console freezes at "Press any key to enter debug mode within 3 seconds" for more than one minute, go to Section 34.9 on page 236 to restore the recovery image.

Figure 28 Recovery Image Damaged

```
Press any key to enter debug mode within 3 seconds.
.....................................

Invalid Recovery Image

ERROR

Enter Debug Mode

>
```

4. If "Connect a computer to port 1 and FTP to 192.168.1.1 to upload the new file" displays on the screen, the firmware file is damaged. Use the procedure in Section 34.10

on page 238 to restore it. If the message does not display, the firmware is OK and you do not need to use the firmware recovery procedure.

Figure 29 Firmware Damaged

```
Building ...

Connect a computer to port 1 and FTP to 192.168.1.1 to upload the new file.
```

34.9 Restoring the Recovery Image

This procedure requires the ZyWALL's recovery image. Download the firmware package from www.zyxel.com and upzip it. The recovery image uses a .ri extension, for example, "1.01(XL.0)C0.ri". Do the following after you have obtained the recovery image file.

You only need to use this section if you need to restore the recovery image.

1. Restart the ZyWALL.
2. When "Press any key to enter debug mode within 3 seconds." displays, press a key to enter debug mode.

Figure 30 Enter Debug Mode

```
BootModule Version: V1.011 | 2007-03-30 12:22:57
DRAM: Size = 510 Mbytes
DRAM POST: Testing:  522240K OK
DRAM Test SUCCESS !

Kernel Version: V2.4.27-kernel-2006-08-21 | 2006-08-21 19:54:00
ZLD Version: V1.01(XL.0) | 2006-09-11 17:41:56

Press any key to enter debug mode within 3 seconds.
.............................
Enter Debug Mode

>
```

3. Enter `atuk` to initialize the recovery process.If the screen displays "ERROR", enter `atur` to initialize the recovery process.

You only need to use the `atuk` or `atur` command if the recovery image is damaged.

Figure 31 atuk Command for Restoring the Recovery Image

```
> atuk
This command is for restoring the "recovery image" (xxx.ri).
Use This command only when
1) the console displays "Invalid Recovery Image" or
2) the console freezes at "Press any key to enter debug mode within 3 seconds"
   for more than one minute.

Note:
Please exit this command immediately if you do not need to restore the
"recovery image".

Do you want to start the recovery process (Y/N)? (default N)
```

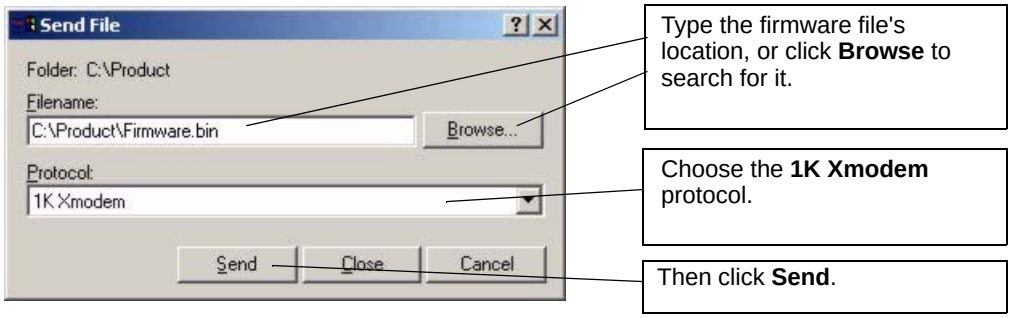
4 Enter Y and wait for the “Starting XMODEM upload” message before activating XMODEM upload on your terminal.

Figure 32 Starting Xmodem Upload

```
Do you want to start the recovery process (Y/N)? (default N)
Starting XMODEM upload (CRC mode)....
C
```

5 This is an example Xmodem configuration upload using HyperTerminal. Click **Transfer**, then **Send File** to display the following screen.

Figure 33 Example Xmodem Upload



6 Wait for about three and a half minutes for the Xmodem upload to finish.

Figure 34 Recovery Image Upload Complete

```
Total  1867264 bytes received.
programming ..................................................
..............................................................
..............................................................
..............................................................
..............................................................
..............................................................

OK


>
```

7 Enter `atgo`. The ZyWALL starts up. If “Connect a computer to port 1 and FTP to 192.168.1.1 to upload the new file” displays on the screen, the firmware file is damaged and you need to use the procedure in Section 34.10 on page 238 to recover the firmware.

Figure 35 atgo Debug Command

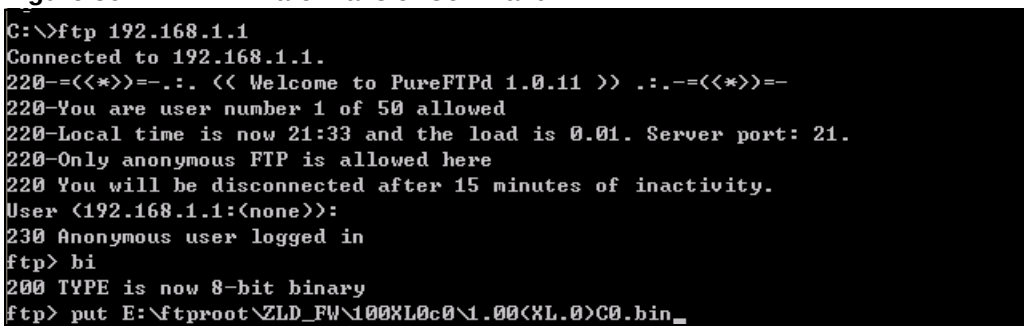
34.10 Restoring the Firmware

This procedure requires the ZyWALL's firmware. Download the firmware package from www.zyxel.com and upzip it. The firmware file uses a .bin extension, for example, "1.01(XL.0)C0.bin". Do the following after you have obtained the firmware file.

This section is not for normal firmware uploads. You only need to use this section if you need to recover the firmware.

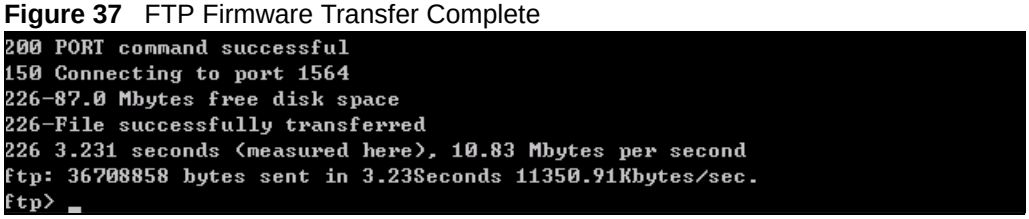
1. Connect your computer to the ZyWALL's port **1** (only port **1** can be used).
2. The ZyWALL's FTP server IP address for firmware recovery is 192.168.1.1, so set your computer to use a static IP address from 192.168.1.2 ~192.168.1.254.
3. Use an FTP client on your computer to connect to the ZyWALL. For example, in the Windows command prompt, type `ftp 192.168.1.1`. Keep the console session connected in order to see when the firmware recovery finishes.
4. Hit enter to log in anonymously.
5. Set the transfer mode to binary (type `bin`).
6. Transfer the firmware file from your computer to the ZyWALL. Type `put` followed by the path and name of the firmware file. This examples uses `put e:\ftproot\ZLD FW \1.01(XL.0)C0.bin`.

Figure 36 FTP Firmware Transfer Command


C:\>ftp 192.168.1.1
Connected to 192.168.1.1.
220-=(<*>)=-.:. ((Welcome to PureFTPd 1.0.11)) .:.-=(<*>)=-
220-You are user number 1 of 50 allowed
220-Local time is now 21:33 and the load is 0.01. Server port: 21.
220-Only anonymous FTP is allowed here
220 You will be disconnected after 15 minutes of inactivity.
User (192.168.1.1:(none)):
230 Anonymous user logged in
ftp> bi
200 TYPE is now 8-bit binary
ftp> put E:\ftproot\ZLD_FW\100XL0c0\1.00(XL.0)C0.bin_

7. Wait for the file transfer to complete.

Figure 37 FTP Firmware Transfer Complete


200 PORT command successful
150 Connecting to port 1564
226-87.0 Mbytes free disk space
226-File successfully transferred
226 3.231 seconds (measured here), 10.83 Mbytes per second
ftp: 36708858 bytes sent in 3.23Seconds 11350.91Kbytes/sec.
ftp> _

8 After the transfer is complete, “Firmware received” or “ZLD-current received” displays. Wait (up to four minutes) while the ZyWALL recovers the firmware.

Figure 38 Firmware Received and Recovery Started

```
Firmware received ...

[Update Filesystem]
       Updating Code
       ..
```

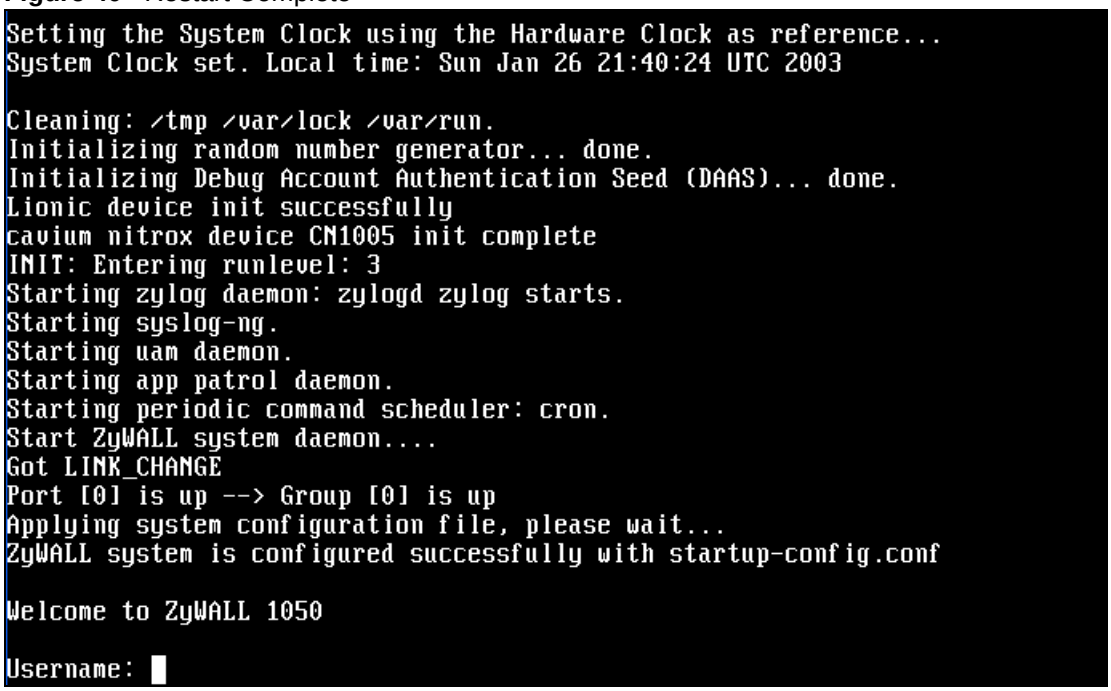
9 The console session displays “done” when the firmware recovery is complete. Then the ZyWALL automatically restarts.

Figure 39 Firmware Recovery Complete and Restart

```
.....
.....
.....
.....
.....
.....
.....
       done

[Update Kernel]
       Extracting Kernel Image
       ..
       done
       Writing Kernel Image ... done

[Update BootModule]
       Extracting BootModule Image
       .
       done
       Writing BootModule
       .....
.....                                        done
Restarting system.
```

10 The username prompt displays after the ZyWALL starts up successfully. The firmware recovery process is now complete and the ZyWALL is ready to use.

Figure 40 Restart Complete


Setting the System Clock using the Hardware Clock as reference...
System Clock set. Local time: Sun Jan 26 21:40:24 UTC 2003
Cleaning: /tmp /var/lock /var/run.
Initializing random number generator... done.
Initializing Debug Account Authentication Seed (DAAS)... done.
Lionic device init successfully
cavium nitrox device CN1005 init complete
INIT: Entering runlevel: 3
Starting zylog daemon: zylogd zylog starts.
Starting syslog-ng.
Starting uam daemon.
Starting app patrol daemon.
Starting periodic command scheduler: cron.
Start ZyWALL system daemon....
Got LINK_CHANGE
Port [0] is up --> Group [0] is up
Applying system configuration file, please wait...
ZyWALL system is configured successfully with startup-config.conf
Welcome to ZyWALL 1050
Username:

34.11 Restoring the Default System Database

The default system database stores information such as the default anti-virus or IDP signatures. The ZyWALL can still operate if the default system database is damaged or missing, but related features (like anti-virus or IDP) may not function properly.

If the default system database file is not valid, the ZyWALL displays a warning message in your console session at startup or when reloading the anti-virus or IDP signatures. It also generates a log. Here are some examples. Use this section to restore the ZyWALL's default system database.

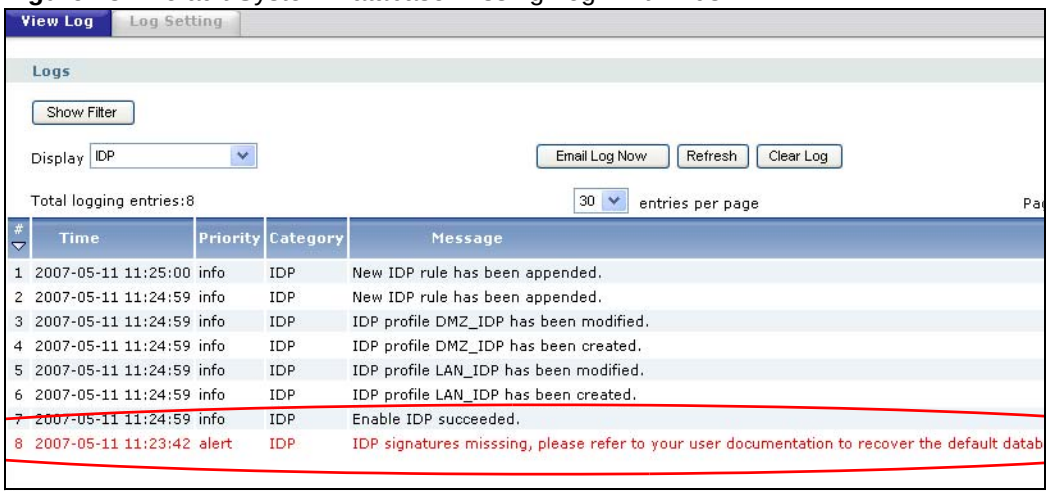
Figure 41 Default System Database Console Session Warning at Startup: Anti-virus

```
Hostname: localhost.

Setting the System Clock using the Hardware Clock as reference...
System Clock set. Local time: Fri May 11 09:31:55 GMT 2007

Cleaning: /tmp /var/lock /var/run.
Initializing random number generator... done.
Initializing Debug Account Authentication Seed (DAAS)... done.
INIT: Entering runlevel: 3
Starting zylog daemon: zylogd zylog starts.
Starting syslog-ng.
Starting uam daemon.
Starting app patrol daemon.
Starting periodic command scheduler: cron.
Start ZyWALL system daemon....
Got LINK_CHANGE
Port [1] is up --> Group [1] is up
% Anti-Virus signatures missing, refer to your user documentation to recover th
e default database file.
% Loading AV signature database has failed.
Applying system configuration file, please wait...
ZyWALL system is configured successfully with startup-config.conf

Welcome to ZyWALL USG 300

Username:
```

Figure 42 Default System Database Console Session Warning When Reloading IDP

```
Router(config)# idp reload
IDP signatures misssing, please refer to your user documentation to recover the
default database file.
retval = -32056
ERROR: Enable IDP engine failed.
Router(config)#
```

Figure 43 Default System Database Missing Log: Anti-virus


View Log
Log Setting
Logs
Show Filter
Display IDP
Email Log Now
Refresh
Clear Log
Total logging entries:8
30 entries per page
Time Priority Category Message
1 2007-05-11 11:25:00 info IDP New IDP rule has been appended.
2 2007-05-11 11:24:59 info IDP New IDP rule has been appended.
3 2007-05-11 11:24:59 info IDP IDP profile DMZ_IDP has been modified.
4 2007-05-11 11:24:59 info IDP IDP profile DMZ_IDP has been created.
5 2007-05-11 11:24:59 info IDP IDP profile LAN_IDP has been modified.
6 2007-05-11 11:24:59 info IDP IDP profile LAN_IDP has been created.
7 2007-05-11 11:24:59 info IDP Enable IDP succeeded.
8 2007-05-11 11:23:42 alert IDP IDP signatures misssing, please refer to your user documentation to recover the default datab

This procedure requires the ZyWALL's default system database file. Download the firmware package from www.zyxel.com and upzip it. The default system database file uses a .db extension, for example, "1.01(XL.0)C0.db". Do the following after you have obtained the default system database file.

34.11.1 Using the atkz -u Debug Command

You only need to use the `atkz -u` command if the default system database is damaged.

1. Restart the ZyWALL.
2. When "Press any key to enter debug mode within 3 seconds." displays, press a key to enter debug mode.

Figure 44 Enter Debug Mode

```
BootModule Version: V1.011 | 2007-03-30 12:22:57
DRAM: Size = 510 Mbytes
DRAM POST: Testing:  522240K OK
DRAM Test SUCCESS !

Kernel Version: V2.4.27-kernel-2006-08-21 | 2006-08-21 19:54:00
ZLD Version: V1.01(XL.0) | 2006-09-11 17:41:56

Press any key to enter debug mode within 3 seconds.
.............................
Enter Debug Mode

> 
```

3. Enter `atkz -u` to start the recovery process.

Figure 45 atkz -u Command for Restoring the Default System Database

```
> atkz -u
-u
OK

> atgo
Booting...
```

4. "Connect a computer to port 1 and FTP to 192.168.1.1 to upload the new file" displays on the screen. Connect your computer to the ZyWALL's port **1** (only port **1** can be used).

Figure 46 Use FTP with Port 1 and IP 192.168.1.1 to Upload File

```
Checking CODE ... Done

Updating ...

Connect a computer to port 1 and FTP to 192.168.1.1 to upload the new file.
```

5. The ZyWALL's FTP server IP address for firmware recovery is 192.168.1.1, so set your computer to use a static IP address from 192.168.1.2 ~192.168.1.254.
6. Use an FTP client on your computer to connect to the ZyWALL. For example, in the Windows command prompt, type `ftp 192.168.1.1`. Keep the console session connected in order to see when the default system database recovery finishes.
7. Hit enter to log in anonymously.

8 Set the transfer mode to binary (type `bin`).

9 Transfer the firmware file from your computer to the ZyWALL. Type `put` followed by the path and name of the firmware file. This examples uses `put e:\ftproot\ZLD FW \1.01(XL.0)C0.db`.

Figure 47 FTP Default System Database Transfer Command

```
C:\>ftp 192.168.1.1
Connected to 192.168.1.1.
220-=(<*>)=-.:. (( Welcome to PureFTPd 1.0.11 )) .:.-=(<*>)=-
220-You are user number 1 of 50 allowed
220-Local time is now 03:56 and the load is 0.00. Server port: 21.
220-Only anonymous FTP is allowed here
220 You will be disconnected after 15 minutes of inactivity.
User (192.168.1.1:(none)):
230 Anonymous user logged in
ftp> bin
200 TYPE is now 8-bit binary
ftp> put E:\ftproot\ZLD_FW\101XL\101XL0C0\1.01(XL.0)C0.db
```

10 Wait for the file transfer to complete.

Figure 48 FTP Default System Database Transfer Complete

```
200 PORT command successful
150 Connecting to port 3709
226-248.5 Mbytes free disk space
226-File successfully transferred
226 0.008 seconds (measured here), 13.31 Mbytes per second
ftp: 112398 bytes sent in 0.02Seconds 7024.88Kbytes/sec.
ftp> _
```

11 The console session displays “done” after the default system database is recovered.

Figure 49 Default System Database Received and Recovery Complete

```
Default System Database received ...

[Update Filesystem]
        Updating Database
        .
        done
```

12 The username prompt displays after the ZyWALL starts up successfully. The default system database recovery process is now complete and the ZyWALL IDP and anti-virus features are ready to use again.

Figure 50 Startup Complete

```
nothing was mounted
Hostname: localhost.

Setting the System Clock using the Hardware Clock as reference...
System Clock set. Local time: Wed May  9 03:26:53 UTC 2007

Cleaning: /tmp /var/lock /var/run.
Initializing random number generator... done.
Initializing Debug Account Authentication Seed (DAAS)... done.
Lionic device init successfully
cavium nitrox device CN505 init complete
INIT: Entering runlevel: 3
Starting zylog daemon: zylogd zylog starts.
Starting syslog-ng.
Starting uam daemon.
Starting app patrol daemon.
Starting periodic command scheduler: cron.
Start ZyWALL system daemon....
Got LINK_CHANGE
Port [1] is up --> Group [1] is up
Got LINK_CHANGE
Port [0] is up --> Group [0] is up
Applying system configuration file, please wait...
ZyWALL system is configured successfully with startup-config.conf

Welcome to ZyWALL 1050

Username:
```

35

Logs

This chapter provides information about the ZyWALL's logs.

When the system log reaches the maximum number of log messages, new log messages automatically overwrite existing log messages, starting with the oldest existing log message first.

See the User's Guide for the maximum number of system log messages in the ZyWALL.

35.1 Log Commands Summary

The following table describes the values required for many log commands. Other values are discussed with the corresponding commands.

Table 142 Input Values for Log Commands

LABEL	DESCRIPTION
module_name	The name of the category; `kernel`, `syslog`, ... The `default` category includes debugging messages generated by open source software. The `all` category includes all messages in all categories.

The following sessions list the logging commands.

35.1.1 Log Entries Commands

This table lists the commands to look at log entries.

Table 143 logging Commands: Log Entries

COMMAND	DESCRIPTION
`show logging entries [priority PRI] [category` *`module_name`*`] [srcip IP] [dstip IP] [service` *`service_name`*`] [begin <1..512> end <1..512>] [keyword` *`keyword`*`]`	Displays the selected entries in the system log. PRI: alert | crit | debug | emerg | error | info | notice | warn *`keyword`*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 63 characters long.This searches the message, source, destination, and notes fields.
`show logging entries field` *`field`* `[begin <1..512> end <1..512>]`	Displays the selected fields in the system log. *`field`*: time | msg | src | dst | note | pri | cat | all

35.1.2 System Log Commands

This table lists the commands for the system log settings.

Table 144 logging Commands: System Log Settings

COMMAND	DESCRIPTION
`show logging status system-log`	Displays the current settings for the system log.
`logging system-log category` *`module_name`* `{disable | level normal | level all}`	Specifies what kind of information, if any, is logged in the system log and debugging log for the specified category.
`[no] logging system-log suppression interval <10..600>`	Sets the log consolidation interval for the system log. The `no` command sets the interval to ten.
`[no] logging system-log suppression`	Enables log consolidation in the system log. The `no` command disables log consolidation in the system log.
`clear logging system-log buffer`	Clears the system log.

35.1.2.1 System Log Command Examples

The following command displays the current status of the system log.

```
Router# configure terminal
Router(config)# show logging status system-log
512 events logged
suppression active  : yes
suppression interval: 10
category settings   :
    content-filter    : normal , forward-web-sites : no     ,
    blocked-web-sites : normal , user              : normal ,
    myZyXEL.com       : normal , zysh              : normal ,
    idp               : normal , app-patrol        : normal ,
    ike               : normal , ipsec             : normal ,
    firewall          : normal , sessions-limit    : normal ,
    policy-route      : normal , built-in-service  : normal ,
    system            : normal , connectivity-check: normal ,
    device-ha         : normal , routing-protocol  : normal ,
    nat               : normal , pki               : normal ,
    interface         : normal , interface-statistics: no     ,
    account           : normal , port-grouping     : normal ,
    force-auth        : normal , l2tp-over-ipsec   : normal ,
    anti-virus        : normal , white-list        : normal ,
    black-list        : normal , ssl-vpn           : normal ,
    cnm               : normal , traffic-log       : no     ,
    file-manage       : normal , dial-in           : normal ,
    adp               : normal , default           : all    ,
```

35.1.3 Debug Log Commands

This table lists the commands for the debug log settings.

Table 145 logging Commands: Debug Log Settings

COMMAND	DESCRIPTION
`show logging debug status`	Displays the current settings for the debug log.
`show logging debug entries [priority pri] [category module_name] [srcip ip] [dstip ip] [service service_name] [begin <1..512> end <1..512>] [keyword keyword]`	Displays the selected entries in the debug log. *pri*: alert | crit | debug | emerg | error | info | notice | warn *keyword*: You can use alphanumeric and `()+/:=?!*#@$_%-` characters, and it can be up to 63 characters long.This searches the message, source, destination, and notes fields.
`show logging debug entries field field [begin <1..1024> end <1..1024>]`	Displays the selected fields in the debug log. *field*: time | msg | src | dst | note | pri | cat | all
`[no] logging debug suppression`	Enables log consolidation in the debug log. The no command disables log consolidation in the debug log.
`[no] logging debug suppression interval <10..600>`	Sets the log consolidation interval for the debug log. The no command sets the interval to ten.
`clear logging debug buffer`	Clears the debug log.

This table lists the commands for the remote syslog server settings.

Table 146 logging Commands: Remote Syslog Server Settings

COMMAND	DESCRIPTION
`show logging status syslog`	Displays the current settings for the remote servers.
`[no] logging syslog <1..4>`	Enables the specified remote server. The no command disables the specified remote server.
`[no] logging syslog <1..4> address {ip | hostname}`	Sets the URL or IP address of the specified remote server. The no command clears this field. *hostname*: You may up to 63 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period.
`[no] logging syslog <1..4> {disable | level normal | level all}`	Specifies what kind of information, if any, is logged for the specified category.
`[no] logging syslog <1..4> facility {local_1 | local_2 | local_3 | local_4 | local_5 | local_6 | local_7}`	Sets the log facility for the specified remote server. The no command sets the facility to local_1.

35.1.4 E-mail Profile Commands

This table lists the commands for the e-mail profile settings.

Table 147 logging Commands: E-mail Profile Settings

COMMAND	DESCRIPTION
`show logging status mail`	Displays the current settings for the e-mail profiles.
`[no] logging mail <1..2>`	Enables the specified e-mail profile. The no command disables the specified e-mail profile.

Table 147 logging Commands: E-mail Profile Settings (continued)

COMMAND	DESCRIPTION
`[no] logging mail <1..2> address {ip | hostname}`	Sets the URL or IP address of the mail server for the specified e-mail profile. The no command clears the mail server field. *hostname*: You may up to 63 alphanumeric characters, dashes (-), or periods (.), but the first character cannot be a period.
`logging mail <1..2> sending_now`	Sends mail for the specified e-mail profile immediately, according to the current settings.
`[no] logging mail <1..2> authentication`	Enables SMTP authentication. The no command disables SMTP authentication.
`[no] logging mail <1..2> authentication username username password password`	Sets the username and password required by the SMTP mail server. The no command clears the username and password fields. *username*: You can use alphanumeric characters, underscores (_), and dashes (-), and it can be up to 31 characters long. *password*: You can use most printable ASCII characters. You cannot use square brackets [ ], double quotation marks (“), question marks (?), tabs or spaces. It can be up to 31 characters long.
`[no] logging mail <1..2> {send-log-to | send-alerts-to} e_mail`	Sets the e-mail address for logs or alerts. The no command clears the specified field. *e_mail*: You can use up to 63 alphanumeric characters, underscores (_), or dashes (-), and you must use the @ character.
`[no] logging mail <1..2> subject subject`	Sets the subject line when the ZyWALL mails to the specified e-mail profile. The no command clears this field. *subject*: You can use up to 60 alphanumeric characters, underscores (_), dashes (-), or `!@#$%*()+=;:',./` characters.
`[no] logging mail <1..2> category module_name level {alert | all}`	Specifies what kind of information is logged for the specified category. The no command disables logging for the specified category.
`[no] logging mail <1..2> schedule {full | hourly}`	Sets the e-mail schedule for the specified e-mail profile. The no command clears the schedule field.
`logging mail <1..2> schedule daily hour <0..23> minute <0..59>`	Sets a daily e-mail schedule for the specified e-mail profile.
`logging mail <1..2> schedule weekly day day hour <0..23> minute <0..59>`	Sets a weekly e-mail schedule for the specified e-mail profile. *day*: sun | mon | tue | wed | thu | fri | sat

35.1.4.1 E-mail Profile Command Examples

The following commands set up e-mail log 1.

```
Router# configure terminal
Router(config)# logging mail 1 address mail.zyxel.com.tw
Router(config)# logging mail 1 subject AAA
Router(config)# logging mail 1 authentication username lachang.li password
XXXXXX
Router(config)# logging mail 1 send-log-to lachang.li@zyxel.com.tw
Router(config)# logging mail 1 send-alerts-to lachang.li@zyxel.com.tw
Router(config)# logging mail 1 from lachang.li@zyxel.com.tw
Router(config)# logging mail 1 schedule weekly day mon hour 3 minute 3
Router(config)# logging mail 1
```

35.1.5 Console Port Logging Commands

This table lists the commands for the console port settings.

Table 148 logging Commands: Console Port Settings

COMMAND	DESCRIPTION
`show logging status console`	Displays the current settings for the console log. (This log is not discussed above.)
`[no] logging console`	Enables the console log. The no command disables the console log.
`logging console category` *`module_name`* `level {alert | crit | debug | emerg | error | info | notice | warn}`	Controls whether or not debugging information for the specified priority is displayed in the console log, if logging for this category is enabled.
`[no] logging console category` *`module_name`*	Enables logging for the specified category in the console log. The no command disables logging.

36

Reports and Reboot

This chapter provides information about the report associated commands and how to restart the ZyWALL using commands.

36.1 Report Commands Summary

The following sections list the report and session commands.

36.1.1 Report Commands

This table lists the commands for reports.

Table 149 report Commands

COMMAND	DESCRIPTION
`[no] report`	Begins data collection. The `no` command stops data collection.
`show report status`	Displays whether or not the ZyWALL is collecting data and how long it has collected data.
`clear report [`*`interface_name`*`]`	Clears the report for the specified interface or for all interfaces.
`show report [`*`interface_name`* `{ip | service | url}]`	Displays the traffic report for the specified interface and controls the format of the report. Formats are: `ip` - traffic by IP address and direction `service` - traffic by service and direction `url` - hits by URL

36.1.2 Report Command Examples

The following commands start collecting data, display the traffic reports, and stop collecting data.

```
Router# configure terminal
Router(config)# show report ge1 ip
No. IP Address      User                  Amount          Direction
================================================================
1   192.168.1.4     admin                 1273(bytes)     Outgoing
2   192.168.1.4     admin                 711(bytes)      Incoming
Router(config)# show report ge1 service
No. Port  Service          Amount          Direction
================================================================
1   21    ftp              1273(bytes)     Outgoing
2   21    ftp              711(bytes)      Incoming
Router(config)# show report ge1 url
No. Hit        URL
================================================================
1   1          140.114.79.60
Router(config)# show report status
Report status: on
Collection period: 0 days 0 hours 0 minutes 18 seconds
```

36.1.3 Session Commands

This table lists the command to display the current sessions.

Table 150 session Commands

COMMAND	DESCRIPTION
`show conn [user` *`username`*`] [service` *`service-name`*`] [source` *`ip`*`] [destination` *`ip`*`] [begin <1..128000>] [end <1..128000>]`	Displays information about the selected sessions or about all sessions. You can select sessions by user name, service object, source IP, destination IP, or session number(s).
`show conn status`	Displays the number of active sessions.

36.2 Reboot

Use this to restart the device (for example, if the device begins behaving erratically).

If you made changes in the CLI, you have to use the `write` command to save the configuration before you reboot. Otherwise, the changes are lost when you reboot.

Use the `reboot` command to restart the device.

37

Session Timeout

Use these commands to modify and display the session timeout values. You must use the `configure terminal` command before you can use these commands.

Table 151 Session Timeout Commands

COMMAND	DESCRIPTION
`session timeout {udp-connect <1..300> | udp-deliver <1..300> | icmp <1..300>}`	Sets the timeout for UDP sessions to connect or deliver and for ICMP sessions.
`show session timeout {icmp | tcp-timewait | udp}`	Displays ICMP, TCP, and UDP session timeouts.

The following example sets the UDP session connect timeout to 10 seconds, the UDP deliver session timeout to 15 seconds, and the ICMP timeout to 15 seconds.

```
Router(config)# session timeout udp-connect 10
Router(config)# session timeout udp-deliver 15
Router(config)# session timeout icmp 15
Router(config)# show session timeout udp
UDP session connect timeout: 10 seconds
UDP session deliver timeout: 15 seconds
Router(config)# show session timeout icmp
ICMP session timeout: 15 seconds
```

38

Diagnostics

This chapter covers how to use the diagnostics feature.

38.1 Diagnostics

The diagnostics feature provides an easy way for you to generate a file containing the ZyWALL's configuration and diagnostic information. You may need to generate this file and send it to customer support during troubleshooting.

38.2 Diagnosis Commands

The following table lists the commands that you can use to have the ZyWALL collect diagnostics information. Use the `configure terminal` command to enter the configuration mode to be able to use these commands.

Table 152 diagnosis Commands

COMMAND	DESCRIPTION
`diag-info collect`	Has the ZyWALL create a new diagnostic file.
`show diag-info`	Displays the name, size, and creation date (in yyyy-mm-dd hh:mm:ss format) of the diagnostic file.

38.3 Diagnosis Commands Example

The following example creates a diagnostic file and displays its name, size, and creation date.

```
Router# configure terminal
Router(config)# diag-info collect
Please wait, collecting information
Router(config)# show diag-info
Filename  : diaginfo-20070423.tar.bz2
File size : 1259 KB
Date      : 2007-04-23 09:55:09
```

39

Maintenance Tools

Use the maintenance tool commands to check the conditions of other devices through the ZyWALL. The maintenance tools can help you to troubleshoot network problems.

Here are maintenace tool commands that you can use in privilege mode.

Table 153 Maintenance Tools Commands in Privilege Mode

COMMAND	DESCRIPTION
`packet-trace [interface` *`interface_name`*`] [ip-proto {<0..255> | `*`protocol_name`*` | any}] [src-host {`*`ip`*` | `*`hostname`*` | any}] [dst-host {`*`ip`*` | `*`hostname`*` | any}] [port {<1..65535> | any}] [file] [duration <1..3600>] [extension-filter `*`filter_extension`*`]` `traceroute {`*`ip`*` | `*`hostname`*`}`	Sends traffic through the specified interface with the specified protocol, source address, destination address, and/or port number. If you specify `file`, the ZyWALL dumps the traffic to `/packet_trace/packet_trace_interface`. Use FTP to retrieve the files (see Section 34.6 on page 232). If you do not assign the duration, the ZyWALL keeps dumping traffic until you use Ctrl-C. Use the extension filter to extend the use of this command. *`protocol_name`*: You can use the name, instead of the number, for some IP protocols, such as `tcp`, `udp`, `icmp`, and so on. The names consist of 1-16 alphanumeric characters, underscores (_), or dashes (-). The first character cannot be a number. *`hostname`*: You can use up to 252 alphanumeric characters, dashes (-), or periods (.). The first character cannot be a period. *`filter_extension`*: You can use 1-256 alphanumeric characters, spaces, or '()+,/ :=?;!*#@$_%.- characters.
`traceroute {`*`ip`*` | `*`hostname`*`}`	Displays the route taken by packets to the specified destination. Use `Ctrl+c` when you want to return to the prompt.

Some examples are shown below.

```
Router# packet-trace duration 3
tcpdump: listening on eth0
19:24:43.239798 192.168.1.10 > 192.168.1.1: icmp: echo request
19:24:43.240199 192.168.1.1 > 192.168.1.10: icmp: echo reply
19:24:44.258823 192.168.1.10 > 192.168.1.1: icmp: echo request
19:24:44.259219 192.168.1.1 > 192.168.1.10: icmp: echo reply
19:24:45.268839 192.168.1.10 > 192.168.1.1: icmp: echo request
19:24:45.269238 192.168.1.1 > 192.168.1.10: icmp: echo reply

6 packets received by filter
0 packets dropped by kernel
```

```
Router# packet-trace interface ge2 ip-proto icmp file extension-filter -s
-> 500 -n
tcpdump: listening on eth1
07:24:07.898639 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)
07:24:07.900450 192.168.105.40 > 192.168.105.133: icmp: echo reply
07:24:08.908749 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)
07:24:08.910606 192.168.105.40 > 192.168.105.133: icmp: echo reply

8 packets received by filter
0 packets dropped by kernel
```

```
Router# packet-trace interface ge2 ip-proto icmp file extension-filter
-> and src host 192.168.105.133 and dst host 192.168.105.40 -s 500 -n
tcpdump: listening on eth1
07:26:51.731558 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)
07:26:52.742666 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)
07:26:53.752774 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)
07:26:54.762887 192.168.105.133 > 192.168.105.40: icmp: echo request (DF)

8 packets received by filter
0 packets dropped by kernel
```

```
Router# traceroute www.zyxel.com
traceroute to www.zyxel.com (203.160.232.7), 30 hops max, 38 byte packets
 1  172.23.37.254  3.049 ms  1.947 ms  1.979 ms
 2  172.23.6.253  2.983 ms  2.961 ms  2.980 ms
 3  172.23.6.1  5.991 ms  5.968 ms  6.984 ms
 4  * * *
```

Here are maintenace tool commands that you can use in configure mode.

Table 154 Maintenance Tools Commands in Configuration Mode

COMMAND	DESCRIPTION
`show arp-table`	Displays the current Address Resolution Protocol table.
`arp IP` *`mac_address`*	Edits or creates an ARP table entry.
`no arp` *`ip`*	Removes an ARP table entry.

The following example creates an ARP table entry for IP address 192.168.1.10 and MAC address 01:02:03:04:05:06. Then it shows the ARP table and finally removes the new entry.

```
Router# arp 192.168.1.10 01:02:03:04:05:06
Router# show arp-table
Address                 HWtype  HWaddress           Flags Mask            Iface
192.168.1.10             ether   01:02:03:04:05:06   CM                    ge1
172.23.19.254            ether   00:04:80:9B:78:00   C                     ge2
Router# no arp 192.168.1.10
Router# show arp-table
Address                 HWtype  HWaddress           Flags Mask            Iface
192.168.1.10                     (incomplete)                              ge1
172.23.19.254            ether   00:04:80:9B:78:00   C                     ge2
```

40

Watchdog Timer

This chapter provides information about the ZyWALL's watchdog timers.

40.1 Hardware Watchdog Timer

The hardware watchdog has the system restart if the hardware fails.

The `hardware-watchdog-timer` commands are for support engineers. It is recommended that you not modify the hardware watchdog timer settings.

Table 155 hardware-watchdog-timer Commands

COMMAND	DESCRIPTION
`[no] hardware-watchdog-timer <4..37>`	Sets how long the system's hardware can be unresponsive before resetting. The no command turns the timer off.
`show hardware-watchdog-timer status`	Displays the settings of the hardware watchdog timer.

40.2 Software Watchdog Timer

The software watchdog has the system restart if the core firmware fails.

The `software-watchdog-timer` commands are for support engineers. It is recommended that you not modify the software watchdog timer settings.

Table 156 software-watchdog-timer Commands

COMMAND	DESCRIPTION
`[no] software-watchdog-timer <10..600>`	Sets how long the system's core firmware can be unresponsive before resetting. The no command turns the timer off.

Table 156 software-watchdog-timer Commands (continued)

COMMAND	DESCRIPTION
`show software-watchdog-timer status`	Displays the settings of the software watchdog timer.
`show software-watchdog-timer log`	Displays a log of when the software watchdog timer took effect.

40.3 Application Watchdog

The application watchdog has the system restart a process that fails. These are the `app-watchdog` commands.Use the `configure terminal` command to enter the configuration mode to be able to use these commands.

Table 157 app-watchdog Commands

COMMAND	DESCRIPTION
`[no] app-watch-dog activate`	Turns the application watchdog timer on or off.
`[no] app-watch-dog console-print {always|once}`	Display debug messages on the console (every time they occur or once). The `no` command changes the setting back to the default.
`[no] app-watch-dog interval <5..60>`	Sets how frequently (in seconds) the ZyWALL checks the system processes. The `no` command changes the setting back to the default.
`[no] app-watch-dog retry-count <1..5>`	Set how many times the ZyWALL is to re-check a process before considering it failed. The `no` command changes the setting back to the default.
`[no] app-watch-dog alert`	Has the ZyWALL send an alert the user when the system is out of memory or disk space.
`[no] app-watch-dog disk-threshold min <1..100> max <1..100>`	Sets the percentage thresholds for sending a disk usage alert. The ZyWALL starts sending alerts when disk usage exceeds the maximum (the second threshold you enter). The ZyWALL stops sending alerts when the disk usage drops back below the minimum threshold (the first threshold you enter). The `no` command changes the setting back to the default.
`[no] app-watch-dog mem-threshold min` *`threshold_min`* `max` *`threshold_max`*	Sets the percentage thresholds for sending a memory usage alert. The ZyWALL starts sending alerts when memory usage exceeds the maximum (the second threshold you enter). The ZyWALL stops sending alerts when the memory usage drops back below the minimum threshold (the first threshold you enter). The `no` command changes the setting back to the default.
`show app-watch-dog config`	Displays the application watchdog timer settings.
`show app-watch-dog monitor-list`	Display the list of applications that the application watchdog is monitoring.

40.3.1 Application Watchdog Commands Example

The following example displays the application watchdog configuration and lists the processes that the application watchdog is monitoring.

```
Router# configure terminal
Router(config)# show app-watch-dog config
Application Watch Dog Setting:
  activate: yes
  alert: yes
  console print: always
  retry count: 3
  interval: 60
  mem threshold: 80% ~ 90%
  disk threshold: 80% ~ 90%
Router(config)# show app-watch-dog monitor-list
#app_name       min_process_count       max_process_count(negative integer
means
 unlimited)
uamd            1                       -1
firewalld       5                       5
policyd         6                       7
contfltd        3                       5
appd            5                       6
classify        1                       1
ospfd           1                       1
ripd            1                       1
resd            1                       1
zyshd_wd        1                       1
sshipsecpm      1                       1
zylogd          1                       -1
syslog-ng       1                       1
zylogger        1                       1
ddns_had        1                       1
tpd                     1                       1
wdtd            1                       1
zebra           1                       1
link_updown     1                       1
aux_config      1                       1
fauthd                  5                               5
decomp_server   1                               1
lavd                    1                               1
sslvpn          1                       1
wan                     1                       1
sslvpnpptp      1                       1
dnsrd           1                       1
signal_wrapper  1                               1
```

List of Commands (Alphabetical)

This section lists the commands and sub-commands in alphabetical order. The commands and sub-commands all appear at the same level.

[no] aaa authentication {*profile-name*} 194
[no] aaa group server ad *group-name* 190
[no] aaa group server ldap *group-name* 191
[no] aaa group server radius *group-name* 192
[no] account {pppoe | pptp} *profile_name* 201
[no] account *profile_name* 61
[no] action-block {login|message|audio|video|file-transfer} 123
[no] action-block {login|message|audio|video|file-transfer} 124
[no] activate 108
[no] activate 123
[no] activate 124
[no] activate 130
[no] activate 139
[no] activate 169
[no] activate 175
[no] activate 221
[no] activate 94
[no] address-object *object_name* 178
[no] ad-server basedn *basedn* 188
[no] ad-server binddn *binddn* 188
[no] ad-server cn-identifier *uid* 188
[no] ad-server host *ad_server* 188
[no] ad-server password *password* 188
[no] ad-server port *port_no* 188
[no] ad-server search-time-limit *time* 188
[no] ad-server ssl 188
[no] answer-rings 221
[no] anti-virus activate 130
[no] anti-virus black-list activate 133
[no] anti-virus black-list file-pattern *av_file_pattern* {activate|deactivate} ... 133
[no] anti-virus eicar activate 130
[no] anti-virus statistics collect 135
[no] anti-virus update auto 134
[no] anti-virus white-list activate 132
[no] anti-virus white-list file-pattern *av_file_pattern* {activate|deactivate} ... 132
[no] app activate 125
[no] app other log [alert] 124
[no] app other *protocol_name* bandwidth-graph 125
[no] app *protocol_name* activate 122
[no] app *protocol_name* allowport <1..65535> 122
[no] app *protocol_name* bandwidth-graph 125
[no] app *protocol_name* bwm 122
[no] app *protocol_name* defaultport <1..65535> 122
[no] app *protocol_name* log [alert] 122
[no] application *application_object* 108
[no] app-watch-dog activate 262
[no] app-watch-dog alert 262
[no] app-watch-dog console-print {always|once} 262
[no] app-watch-dog disk-threshold min <1..100> max <1..100> 262

[no] app-watch-dog interval <5..60> 262
[no] app-watch-dog mem-threshold min *threshold_min* max *threshold_max* 262
[no] app-watch-dog retry-count <1..5> 262
[no] area IP [{stub | nssa}] 77
[no] area IP authentication 77
[no] area IP authentication authentication-key *authkey* 77
[no] area IP authentication message-digest 77
[no] area IP authentication message-digest-key <1..255> md5 *authkey* 77
[no] area IP virtual-link IP 77
[no] area IP virtual-link IP authentication 77
[no] area IP virtual-link IP authentication authentication-key *authkey* 78
[no] area IP virtual-link IP authentication message-digest 78
[no] area IP virtual-link IP authentication message-digest-key <1..255> md5 *authkey* 78
[no] area IP virtual-link IP authentication same-as-area 78
[no] area IP virtual-link IP authentication-key *authkey* 78
[no] authentication {chap-pap | chap | pap | mschap | mschap-v2} 201
[no] authentication {chap-pap | chap | pap | mschap | mschap-v2} 62
[no] authentication {string *password* | ah-md5 *password*} 168
[no] authentication mode {md5 | text} 76
[no] authentication string *authkey* 76
[no] backmx 84
[no] bandwidth excess-usage 123
[no] bandwidth excess-usage 124
[no] bandwidth <1..1048576> priority <1..1024> [maximize-bandwidth-usage] 70
[no] bind *interface_name* 61
[no] block 80
[no] bwm activate 125
[no] bwm activate 70
[no] bypass {white-list | black-list} 131
[no] client-identifier *mac_address* 52
[no] client-name *host_name* 52
[no] clock daylight-saving 208
[no] clock saving-interval begin {apr|aug|dec|feb|jan|jul|jun|mar|may|nov|oct|sep}
{1|2|3|4|last} {fri|mon|sat|sun|thu|tue|wed} *hh:mm* end
{apr|aug|dec|feb|jan|jul|jun|mar|may|nov|oct|sep} {1|2|3|4|last}
{fri|mon|sat|sun|thu|tue|wed} *hh:mm* offset 208
[no] clock time-zone {-|+*hh*} 208
[no] cnm-agent activate 222
[no] cnm-agent auth activate 222
[no] cnm-agent manager *url* 222
[no] cnm-agent periodic-inform activate 222
[no] compression {on | off} 202
[no] connection-id *connection_id* 202
[no] connectivity {nail-up | dial-on-demand} 61
[no] connlimit max-per-host <1..8192> 94
[no] console baud *baud_rate* 209
[no] content-filter active 159
[no] content-filter block message *message* 159
[no] content-filter block redirect *redirect_url* 159
[no] content-filter cache-timeout *cache_timeout* 159
[no] content-filter cache-timeout *cache_timeout* 161
[no] content-filter default block 159
[no] content-filter license *license* 159
[no] content-filter license *license* 160
[no] content-filter policy *policy_number address schedule filtering_profile* 159
[no] content-filter profile *filtering_profile* custom activex 160
[no] content-filter profile *filtering_profile* custom cookie 160
[no] content-filter profile *filtering_profile* custom forbid *forbid_hosts* 160
[no] content-filter profile *filtering_profile* custom java 160

[no] content-filter profile *filtering_profile* custom keyword *keyword* 160
[no] content-filter profile *filtering_profile* custom proxy 160
[no] content-filter profile *filtering_profile* custom trust *trust_hosts* 160
[no] content-filter profile *filtering_profile* custom trust-allow-features 160
[no] content-filter profile *filtering_profile* custom trust-only 160
[no] content-filter profile *filtering_profile* custom 160
[no] content-filter profile *filtering_profile* url category {category_name} 160
[no] content-filter profile *filtering_profile* url match {block | log | block_log} 161
[no] content-filter profile *filtering_profile* url offline {block | log | block_log}
161
[no] content-filter profile *filtering_profile* url unrate {block | log | block_log} 161
[no] content-filter profile *filtering_profile* url url-server 161
[no] content-filter profile *filtering_profile* 160
[no] content-filter service-timeout *service_timeout* 161
[no] crypto map *map_name* 102
[no] crypto *map_name* 106
[no] crypto *profile_name* 80
[no] custom IP 84
[no] deactivate 70
[no] default-router *ip* 53
[no] description *description* 108
[no] description *description* 169
[no] description *description* 173
[no] description *description* 175
[no] description *description* 179
[no] description *description* 183
[no] description *description* 221
[no] description *description* 50
[no] description *description* 62
[no] description *description* 70
[no] description *description* 95
[no] destination {*address_object* | *group_name*} 175
[no] destination {*address_object*|any} 70
[no] destination *profile_name* 123
[no] destination *profile_name* 124
[no] destinationip *address_object* 95
[no] device-ha sync authentication password *password* 169
[no] device-ha sync auto 169
[no] device-ha sync from {*hostname* | *ip*} 169
[no] device-ha sync interval <1..1440> 169
[no] device-ha sync now 169
[no] device-ha sync port <1..65535> 169
[no] device-ha vrrp-group *vrrp_group_name* 168
[no] dialing-type {tone | pulse} 62
[no] dial-timeout <30..120> 62
[no] domainname *domain_name* 207
[no] domain-name *domain_name* 53
[no] downstream <0..1048576> 51
[no] dpd 101
[no] duplex <full | half> 57
[no] encryption {nomppe | mppe-40 | mppe-128} 202
[no] file-decompression [unsupported destroy] 131
[no] firewall activate 96
[no] first-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns} 53
[no] first-wins-server *ip* 53
[no] flood-detection {tcp-flood | udp-flood | ip-flood | icmp-flood} {activate | log
[alert] | block} 142
[no] force 175
[no] from *zone_name* 123

[no] from *zone_name* 124
[no] from *zone_object* 131
[no] from *zone_object* 95
[no] from-zone *zone_profile* 139
[no] groupname *groupname* 173
[no] groupname *groupname* 173
[no] ha-iface *interface_name* 84
[no] hardware-address *mac_address* 52
[no] hardware-watchdog-timer <4..37> 261
[no] host *hostname* 84
[no] host *ip* 52
[no] hostname *hostname* 207
[no] http-inspection {http-xxx} action {drop | reject-sender | reject-receiver | reject-both}} 142
[no] http-inspection {http-xxx} activate 142
[no] icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} activate 143
[no] idle <0..360> 202
[no] idle <0..360> 62
[no] idp 138
[no] idp {signature | system-protect} update auto 151
[no] idp statistics collect 152
[no] in-dnat activate 104
[no] infected-action {destroy | send-win-msg} 131
[no] initial-string *initial_string* 221
[no] initial-string *initial_string* 62
[no] in-snat activate 104
[no] interface {*num* | append | insert *num*} *interface* {<cr> | weight <1..10> | limit <1..1048576> | passive} 66
[no] interface *interface_name* 168
[no] interface *interface_name* 50
[no] interface *interface_name* 70
[no] interface *interface_name* 80
[no] ip address dhcp 50
[no] ip address *ip subnet_mask* 50
[no] ip ddns profile *profile_name* 84
[no] ip dhcp pool *profile_name* 52
[no] ip dhcp-pool *profile_name* 53
[no] ip dns server a-record *fqdn w.x.y.z* 210
[no] ip dns server mx-record *domain_name* {*w.x.y.z*|*fqdn*} 210
[no] ip dns server zone-forwarder {<1..32>|append|insert <1..32>} {*domain_name*|*} {interface *interface_name* |user-defined *w.x.y.z*} [private] 210
[no] ip ftp server 217
[no] ip ftp server cert *certificate_name* 217
[no] ip ftp server port <1..65535> 217
[no] ip ftp server tls-required 217
[no] ip gateway *ip* 50
[no] ip helper-address *ip* 54
[no] ip http authentication *auth_method* 212
[no] ip http port <1..65535> 212
[no] ip http secure-port <1..65535> 212
[no] ip http secure-server 212
[no] ip http secure-server auth-client 212
[no] ip http secure-server cert *certificate_name* 212
[no] ip http secure-server force-redirect 212
[no] ip http server 213
[no] ip ospf authentication-key *password* 56
[no] ip ospf cost <1..65535> 56
[no] ip ospf dead-interval <1..65535> 57

[no] ip ospf hello-interval <1..65535> 57
[no] ip ospf priority <0..255> 56
[no] ip ospf retransmit-interval <1..65535> 57
[no] ip rip {send | receive} version <1..2> 55
[no] ip rip v2-broadcast 56
[no] ip route {*w.x.y.z*} {*w.x.y.z*} {*interface*|*w.x.y.z*} <0..127> 73
[no] ip ssh server 214
[no] ip ssh server cert *certificate_name* 214
[no] ip ssh server port <1..65535> 214
[no] ip ssh server v1 215
[no] ip telnet server 215
[no] ip telnet server port <1..65535> 215
[no] ip-select {iface | auto | custom} 84
[no] isakmp policy *policy_name* 101
[no] join *interface_name* 60
[no] l2tp-over-ipsec activate; 113
[no] l2tp-over-ipsec first-dns-server {*ip* | *interface_name*} {1st-dns|2nd-dns|3rd-dns}|
{*ppp_interface*|aux}{1st-dns|2nd-dns}} 114
[no] l2tp-over-ipsec first-wins-server *ip* 114
[no] l2tp-over-ipsec keepalive-timer <1..180> 114
[no] l2tp-over-ipsec second-dns-server {*ip* | *interface_name*} {1st-dns|2nd-dns|3rd-dns}|
{*ppp_interface*|aux}{1st-dns|2nd-dns}} 114
[no] l2tp-over-ipsec second-wins-server *ip* 114
[no] l2tp-over-ipsec user user_name 113
[no] ldap-server basedn *basedn* 188
[no] ldap-server binddn *binddn* 188
[no] ldap-server cn-identifier *uid* 188
[no] ldap-server host *ldap_server* 188
[no] ldap-server password *password* 188
[no] ldap-server port *port_no* 188
[no] ldap-server search-time-limit *time* 189
[no] ldap-server ssl 189
[no] lease {<0..365> [<0..23> [<0..59>]] | infinite} 53
[no] local-address *ip* 61
[no] log [alert] 123
[no] log [alert] 124
[no] log [alert] 131
[no] log [alert] 95
[no] logging console 249
[no] logging console category *module_name* 249
[no] logging debug suppression 247
[no] logging debug suppression interval <10..600> 247
[no] logging mail <1..2> 247
[no] logging mail <1..2> {send-log-to | send-alerts-to} *e_mail* 248
[no] logging mail <1..2> address {*ip* | *hostname*} 248
[no] logging mail <1..2> authentication 248
[no] logging mail <1..2> authentication username *username* password *password* 248
[no] logging mail <1..2> category *module_name* level {alert | all} 248
[no] logging mail <1..2> schedule {full | hourly} 248
[no] logging mail <1..2> subject *subject* 248
[no] logging syslog <1..4> 247
[no] logging syslog <1..4> {disable | level normal | level all} 247
[no] logging syslog <1..4> address {*ip* | *hostname*} 247
[no] logging syslog <1..4> facility {local_1 | local_2 | local_3 | local_4 | local_5 |
local_6 | local_7} 247
[no] logging system-log suppression 246
[no] logging system-log suppression interval <10..600> 246
[no] manage-ip IP 168
[no] mtu <576..1500> 51

[no] mute 221
[no] mx {*ip* | *domain_name*} 84
[no] nail-up 103
[no] natt 101
[no] negotiation auto 57
[no] netbios-broadcast 103
[no] network *interface* area IP 77
[no] network *interface_name* 55
[no] network *interface_name* 76
[no] network *interface_name* area *ip* 56
[no] network-extension {activate | ip-pool *address_object* | 1st-dns {*address_object* | *ip* } | 2nd-dns {*address_object* | *ip* } | 1st-wins {*address_object* | *ip* } | 2nd-wins {*address_object* | *ip* } | network *address_object*} 108
[no] next-hop {auto|gateway *address object* |interface *interface_name* |trunk *trunk_name*|tunnel *tunnel_name*} 70
[no] ntp 208
[no] ntp server {*fqdn*|*w.x.y.z*} 208
[no] object-group address *group_name* 178
[no] object-group *group_name* 179
[no] object-group *group_name* 183
[no] object-group service *group_name* 182
[no] outonly-interface *interface_name* 55
[no] outonly-interface *interface_name* 76
[no] out-snat activate 103
[no] passive-interface *interface_name* 55
[no] passive-interface *interface_name* 56
[no] passive-interface *interface_name* 76
[no] passive-interface *interface_name* 77
[no] password *password* 201
[no] password *password* 62
[no] phone-number *phone* 62
[no] ping-check activate 55
[no] policy-enforcement 103
[no] port *interface_name* 59
[no] port <0..65535> 123
[no] port <0..65535> 124
[no] port-speed {9600 | 19200 | 38400 | 57600 | 115200} 221
[no] port-speed {9600 | 19200 | 38400 | 57600 | 115200} 62
[no] preempt 168
[no] priority <1..254> 168
[no] protocol {tcp | udp} 124
[no] radius-server host *radius_server* auth-port *auth_port* 189
[no] radius-server key *secret* 189
[no] radius-server timeout *time* 189
[no] redistribute {static | ospf} 76
[no] redistribute {static | rip} 76
[no] redistribute {static | rip} metric-type <1..2> metric <0..16777214> 76
[no] remote-address *ip* 61
[no] replay-detection 103
[no] report 251
[no] role {master | backup} 168
[no] router-id IP 77
[no] scan {http | ftp | imap4 | smtp | pop3} 131
[no] scan-detection {icmp-sweep | icmp-filtered-sweep} {activate | log [alert] | block} 141
[no] scan-detection {ip-xxx} {activate | log [alert] | block} 141
[no] scan-detection {tcp-xxx} {activate | log [alert] | block} 141
[no] scan-detection {udp-xxx} {activate | log [alert] | block} 141
[no] scan-detection open-port {activate | log [alert] | block} 142

[no] schedule *profile_name* 123
[no] schedule *profile_name* 124
[no] schedule *schedule_name* 175
[no] schedule *schedule_object* 70
[no] schedule *schedule_object* 95
[no] second-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns} 53
[no] second-wins-server *ip* 53
[no] server basedn *basedn* 190
[no] server basedn *basedn* 191
[no] server binddn *binddn* 190
[no] server binddn *binddn* 191
[no] server cn-identifier *uid* 190
[no] server cn-identifier *uid* 191
[no] server host *ad_server* 190
[no] server host *ldap_server* 191
[no] server host *radius_server* 192
[no] server *ip* 202
[no] server key *secret* 192
[no] server password *password* 190
[no] server password *password* 191
[no] server port *port_no* 190
[no] server port *port_no* 191
[no] server search-time-limit *time* 190
[no] server search-time-limit *time* 191
[no] server ssl 190
[no] server ssl 191
[no] server timeout *time* 192
[no] service {*service_name*|any} 70
[no] service *service_name* 95
[no] service-name {*ip* | *hostname* | *service_name*} 202
[no] service-object *object_name* 182
[no] service-type {dyndns | dyndns_static | dyndns_custom} 84
[no] shutdown 50
[no] shutdown 62
[no] signature *sid* activate 140
[no] signature *sid* activate 145
[no] snat {outgoing-interface|pool {*address_object*}} 70
[no] snmp-server 219
[no] snmp-server community *community_string* {ro|rw} 219
[no] snmp-server contact *description* 219
[no] snmp-server enable {informs|traps} 219
[no] snmp-server host {*w.x.y.z*} [*community_string*] 219
[no] snmp-server location *description* 219
[no] snmp-server port <1..65535> 219
[no] software-watchdog-timer <10..600> 261
[no] source {*address_object* | *group_name*} 175
[no] source {*address_object*|any} 70
[no] source *profile_name* 123
[no] source *profile_name* 124
[no] sourceip *address_object* 95
[no] sourceport {tcp|udp} {eq <1..65535>|range <1..65535> <1..65535>} 95
[no] speed <100,10> 57
[no] sslvpn application *application_object* 203
[no] sslvpn *profile_name* 80
[no] sslvpn *tunnel_name* 70
[no] starting-address *ip* pool-size <1..65535> 53
[no] tcp-decoder {tcp-xxx} action {drop | reject-sender | reject-receiver | reject-both}}
142
[no] tcp-decoder {tcp-xxx} activate 142

[no] third-dns-server {*ip* | *interface_name* {1st-dns | 2nd-dns | 3rd-dns} 53
[no] to {*zone_object*|ZyWALL} 95
[no] to *zone_name* 123
[no] to *zone_name* 124
[no] to *zone_object* 131
[no] to-zone *zone_profile* 139
[no] trigger <1..8> incoming *service_name* trigger *service_name* 70
[no] tunnel *tunnel_name* 71
[no] udp-decoder {truncated-header | undersize-len | oversize-len} activate 142
[no] upstream <0..1048576> 51
[no] user *user_name* 108
[no] user *username* 123
[no] user *username* 124
[no] user *username* 173
[no] user *username* 201
[no] user *user_name* 71
[no] user *user_name* 95
[no] username *username* 62
[no] username *username* password *password* 84
[no] users idle-detection 174
[no] users idle-detection timeout <1..60> 174
[no] users lockout-period <1..65535> 173
[no] users retry-count <1..99> 173
[no] users retry-limit 173
[no] users simultaneous-logon {administration | access} enforce 174
[no] users simultaneous-logon {administration | access} limit <1..1024> 174
[no] users update-lease automation 174
[no] version <1..2> 76
[no] vlan-id <1..4094> 59
[no] vpn-concentrator *profile_name* 105
[no] vrid <1..254> 168
[no] wan-iface *interface_name* 84
[no] webpage-encrypt 204
[no] wildcard 84
[no] xauth type {server *xauth_method* | client name *username* password *password*} .. 102
[no] zone *profile_name* 80
{signature | anomaly | system-protect} activate 138
{signature | anomaly | system-protect} activation 138
aaa authentication *profile-name*[no] *member1* [*member2*] [*member3*] 194
aaa authentication rename *profile-name-old profile-name-new* 193
aaa group server ad *group-name* 190
aaa group server ad rename *group-name group-name* 190
aaa group server ldap *group-name* 191
aaa group server ldap rename *group-name group-name* 191
aaa group server radius *group-name* 192
aaa group server radius rename {*group-name-old*} *group-name-new* 192
access {forward | drop | reject} 123
access {forward | drop | reject} 124
action <allow|deny|reject> 94
activate 101
activate 103
address-object *object_name* {*ip* | *ip_range* | *ip_subnet*} 178
address-object rename *object_name object_name* 178
algorithm {wrr | llf | spill-over} 66
anti-virus black-list replace *old_av_file_pattern new_av_file_pattern* {activate|deacti-
vate} 133
anti-virus reload signatures 130
anti-virus rule append 130
anti-virus rule delete <1..32> 131

anti-virus rule insert <1..32> 130
anti-virus rule move <1..32> to <1..32> 131
anti-virus rule <1..32> 130
anti-virus search signature {all | category *category* | id *id* | name *name* | severity *severity* [{from *id* to *id*}] 134
anti-virus statistics flush 135
anti-virus update daily <0..23> 134
anti-virus update hourly 134
anti-virus update signatures 134
anti-virus update weekly {sun | mon | tue | wed | thu | fri | sat} <0..23> 134
anti-virus white-list replace *old_av_file_pattern new_av_file_pattern* {activate|deactivate} 132
app other {forward | drop | reject} 124
app other append 124
app other default 124
app other insert <1..64> 124
app other move <1..64> to <1..64> 125
app other <1..64> 124
app *protocol_name* {forward | drop | reject} 122
app *protocol_name* bandwidth <0..102400> 122
app *protocol_name* mode {portless | portbase} 122
app *protocol_name* rule append 123
app *protocol_name* rule default 123
app *protocol_name* rule insert <1..64> 123
app *protocol_name* rule move <1..64> to <1..64> 123
app *protocol_name* rule <1..64> 123
apply 29
apply /conf/*file_name.conf* 231
area IP virtual-link IP message-digest-key <1..255> md5 *authkey* 78
arp IP *mac_address* 259
atse 29
authentication {pre-share | rsa-sig} 102
authentication key <1..255> key-string *authkey* 76
bandwidth {inbound|outbound} <0..1048576> 123
bandwidth {inbound|outbound} <0..1048576> 124
bandwidth priority <1..7> 123
bandwidth priority <1..7> 124
bind *profile* 139
ca enroll cmp name *certificate_name* cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length* num <0..99999999> password *password* ca *ca_name* url *url*; 196
ca enroll scep name *certificate_name* ..... cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length* password *password* ca *ca_name* url *url* 196
ca generate pkcs10 name *certificate_name* cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length* 197
ca generate pkcs12 name *name* password *password* 197
ca generate x509 name *certificate_name* cn-type {ip cn *cn_address*|fqdn cn *cn_domain_name*|mail cn *cn_email*} [ou *organizational_unit*] [o *organization*] [c *country*] key-type {rsa|dsa} key-len *key_length* 197
ca rename category {local|remote} *old_name new_name* 197
ca validation *remote_certificate* 197
cdp {activate|deactivate} 197
certificate *certificate-name* 102
clear 29
clear aaa authentication *profile-name* 193

clear aaa group server ad [*group-name*] 190
clear aaa group server ldap [*group-name*] 191
clear aaa group server radius *group-name* 192
clear ip dhcp binding {*ip* | *} 54
clear logging debug buffer 247
clear logging system-log buffer 246
clear report [*interface_name*] 251
clock date *yyyy-mm-dd* time *hh:mm:ss* 208
clock time *hh:mm:ss* 208
cnm-agent keepalive interval <10..90> 222
cnm-agent periodic-inform interval <10..86400> 222
cnm-agent trigger-inform [interval] 222
configure 29
content-filter policy *policy_number* shutdown 159
content-filter url-cache test *url* 159
content-filter url-cache test *url* 161
content-filter url-server test url [server *rating_server*] [timeout *query_timeout*] 159
content-filter url-server test url [server *rating_server*] [timeout *query_timeout*] 161
copy 29
copy {/cert | /conf | /idp | /packet_trace | /script | /tmp}*file_name-a.conf* {/cert | /conf | /idp | /packet_trace | /script | /tmp}*/file_name-b.conf* 231
copy running-config /conf/*file_name.conf* 231
copy running-config startup-config 231
crypto map dial *map_name* 102
crypto map *map_name* 103
crypto map *map_name* 105
crypto map rename *map_name map_name* 102
deactivate 101
deactivate 103
debug (*) 29
debug app 31
debug app show l7protocol (*) 31
debug ca (*) 31
debug cmdexec {on|off} 31
debug core-file (*) 31
debug device-ha (*) 31
debug force-auth (*) 31
debug gui (*) 31
debug gui show cgidump (*) 31
debug hardware (*) 31
debug idp 31
debug interface ifconfig [interface] 31
debug kernel (*) 31
debug myzyxel server (*) 31
debug network arpignore (*) 31
debug no myzyxel server (*) 31
debug policy-route (*) 31
debug service-register 31
debug show myzyxel server status 31
debug system dmesg 31
debug system free 31
debug system ip addr 31
debug system ip route get ip_addr 31
debug system ip route show table {default|local|main|num} 31
debug system ip rule 31
debug system ipcs 31
debug system iptables list chain {forward|prerouting|postrouting|input|output|pre_id} 32

debug system iptables list table {nat|filter|mangle|vpn|zymark|vpnid|cfilter} 32
debug system lsmod (*) 32
debug system ps 32
debug system show conntrack 32
debug system show cpu status 32
debug system show ksyms (*) 32
debug system show slabinfo 32
debug system tc {class|filter|qdisc} list 32
debug system tcpdump interface 32
debug system vmstat 32
debug update server (*) 32
debug zyinetpkt {set|show} {desitnation|hooknum|protocol|enable|priority|source} . 32
delete 29
delete {/cert | /conf | /idp | /packet_trace | /script | /tmp}*/file_name* 231
details 29
device-ha link-monitoring activate 170
device-register checkuser *user_name* 38
device-register username *user_name* password *password* [e-mail *user@domainname* country-code *country_code*] 38
diag 30
diag-info 30
diag-info collect 255
dial-in 221
dir 30
dir {/cert | /conf | /idp | /packet_trace | /script | /tmp} 231
disable 30
enable 30
encapsulation {tunnel | transport} 103
exit 30
exit 57
exit 95
firewall append 96
firewall delete <1..5000> 96
firewall flush 96
firewall insert <1..5000> 96
firewall move <1..5000> to <1..5000> 96
firewall *zone_object* {*zone_object*|ZyWALL} append 95
firewall *zone_object* {*zone_object*|ZyWALL} delete <1..5000> 96
firewall *zone_object* {*zone_object*|ZyWALL} flush 96
firewall *zone_object* {*zone_object*|ZyWALL} insert <1..5000> 96
firewall *zone_object* {*zone_object*|ZyWALL} move <1..5000> to <1..5000> 96
firewall *zone_object* {*zone_object*|ZyWALL} <1..5000> 95
firewall <1..5000> 94
flood-detection block-period <1..3600> 142
flush 66
force-auth policy append 174
force-auth policy delete <1..1024> 175
force-auth policy flush 175
force-auth policy insert <1..1024> 175
force-auth policy move <1..1024> to <1..1024> 175
force-auth policy <1..1024> 174
group1 101
group2 101
group5 101
groupname rename *groupname groupname* 173
htm 30
http-inspection {http-xxx} log [alert] 142
icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} action {drop | reject-sender | reject-receiver | reject-both}} 143

icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} log [alert] 143
idp {signature | system-protect} update daily <0..23> 151
idp {signature | system-protect} update hourly 151
idp {signature | system-protect} update signatures 151
idp {signature | system-protect} update weekly {sun | mon | tue | wed | thu | fri | sat} <0..23> 151
idp {signature| anomaly } rule { append | <1..32> | insert <1..32> } 139
idp {signature| anomaly } rule { delete <1..32> | move <1..32> to <1..32> } 139
idp anomaly *newpro* [base {all | none}] 141
idp customize signature edit *quoted_string* 148
idp customize signature *quoted_string* 148
idp reload 138
idp rename {signature | anomaly} *profile1 profile2* 138
idp search signature *my_profile* name *quoted_string* sid SID severity *severity_mask* platform *platform_mask* policytype *policytype_mask* service *service_mask* activate {any | yes | no} log {any | no | log | log-alert} action *action_mask* 145
idp search system-protect *my_profile* name *quoted_string* sid SID severity *severity_mask* platform *platform_mask* policytype *policytype_mask* service *service_mask* activate {any | yes | no} log {any | no | log | log-alert} action *action_mask* 145
idp signature *newpro* [base {all | lan | wan | dmz | none}] 140
idp statistics flush 152
idp system-protect 145
idp system-protect deactivate 138
in-dnat append protocol {all | tcp | udp} original-ip *address_name* <0..65535> <0..65535> mapped-ip *address_name* <0..65535> <0..65535> 104
in-dnat delete <1..10> 104
in-dnat insert <1..10> protocol {all | tcp | udp} original-ip *address_name* <0..65535> <0..65535> mapped-ip *address_name* <0..65535> <0..65535> 104
in-dnat move <1..10> to <1..10> 104
in-dnat <1..10> protocol {all | tcp | udp} original-ip *address_name* <0..65535> <0..65535> *mapped-ip address_name* <0..65535> <0..65535> 104
in-snat source *address_name* destination *address_name* snat *address_name* 104
interface 30
interface aux 62
interface dial aux 62
interface dial *interface_name* 60
interface disconnect aux 62
interface disconnect *interface_name* 60
interface *interface_name* 51
interface *interface_name* 53
interface *interface_name* 54
interface *interface_name* 55
interface *interface_name* 56
interface *interface_name* 59
interface *interface_name* 60
interface *interface_name* 61
ip dhcp pool rename *profile_name profile_name* 51
ip dns server cache-flush 210
ip dns server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*address_object*} action {accept|deny} 210
ip dns server rule move <1..32> to <1..32> 210
ip dns server zone-forwarder move <1..32> to <1..32> 210
ip ftp server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} 217
ip ftp server rule move <1..32> to <1..32> 217
ip gateway *ip* metric <0..15> 50
ip http secure-server table {admin|user} rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} ... 213

ip http secure-server table {admin|user} rule move <1..32> to <1..32> 213
ip http server table {admin|user} rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} 213
ip http server table {admin|user} rule move <1..32> to <1..32> 213
ip http-redirect activate *description* 88
ip http-redirect deactivate *description* 88
ip http-redirect *description* interface *interface_name* redirect-to *w.x.y.z* <1..65535> 88
ip http-redirect *description* interface *interface_name* redirect-to *w.x.y.z* <1..65535> deactivate 88
ip http-redirect flush 88
ip ospf authentication 56
ip ospf authentication message-digest 56
ip ospf authentication same-as-area 56
ip ospf message-digest-key <1..255> md5 *password* 56
ip route replace {*w.x.y.z*} {*w.x.y.z*} {*interface*|*w.x.y.z*} <0..127> with {*w.x.y.z*} {*w.x.y.z*} {*interface*|*w.x.y.z*} <0..127> 73
ip ssh server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} 214
ip ssh server rule move <1..32> to <1..32> 214
ip telnet server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} 216
ip telnet server rule move <1..32> to <1..32> 216
ip virtual-server {activate | deactivate} *profile_name* 86
ip virtual-server *profile_name* interface *interface_name* original-ip {any | IP | *address_object*} map-to IP map-type any [deactivate] 85
ip virtual-server *profile_name* interface *interface_name* original-ip {any | IP | *address_object*} map-to IP map-type port protocol {any | tcp | udp} original-port <1..65535> mapped-port <1..65535> [deactivate] 86
ip virtual-server *profile_name* interface *interface_name* original-ip {any | IP | *address_object*} map-to IP map-type ports protocol {any | tcp | udp} original-port-begin <1..65535> original-port-end <1..65535> mapped-port-begin <1..65535> [deactivate] 86
ip virtual-server rename *profile_name profile_name* 86
ipsec-isakmp *policy_name* 103
isakmp keepalive <2..60> 101
isakmp policy *policy_name* 101
isakmp policy rename *policy_name policy_name* 101
keystring *pre_shared_key* 102
l2tp-over-ipsec authentication *aaa authentication profile_name* 113
l2tp-over-ipsec crypto *map_name* 113
l2tp-over-ipsec pool *address-object* 113
l2tp-over-ipsec recover default-ipsec-policy 113
language <English | Simplified_Chinese | Traditional_Chinese> 223
ldap {activate|deactivate} 197
ldap ip {*ip*|*fqdn*} port <1..65535> [id *name* password *password*] [deactivate] 197
lifetime <180..3000000> 101
local-id type {ip *ip* | fqdn *domain_name* | mail *e_mail* | dn *distinguished_name*} .. 102
local-ip {ip {*ip* | *domain_name*} | interface *interface_name*} 101
local-ip *ip* 105
local-policy *address_name* 103
logging console category *module_name* level {alert | crit | debug | emerg | error | info | notice | warn} 249
logging mail <1..2> schedule daily hour <0..23> minute <0..59> 248
logging mail <1..2> schedule weekly day *day* hour <0..23> minute <0..59> 248
logging mail <1..2> sending_now 248
logging system-log category *module_name* {disable | level normal | level all} 246
mode {main | aggressive} 101
mode {normal | trunk} 66

move <1..8> to <1..8> 66
network *ip mask* 53
network IP/<1..32> 53
no address-object *object_name* 178
no app other <1..64> 125
no app *protocol_name* rule <1..64> 123
no area IP virtual-link IP message-digest-key <1..255> 78
no arp *ip* 259
no authentication key 76
no bind 139
no ca category {local|remote} *certificate_name* 198
no ca validation *name* 198
no device-ha link-monitoring 170
no http-inspection {http-xxx} log 142
no icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-head-
er} action 143
no icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-head-
er} log 143
no idp {signature | anomaly} *profile3* 138
no idp {signature| anomaly } rule <1..32> 139
no idp customize signature *custom_sid* 148
no ip dns server rule <1..32> 210
no ip ftp server rule <1..32> 217
no ip http secure-server table {admin|user} rule <1..32> 213
no ip http server table {admin|user} rule <1..32> 213
no ip http-redirect *description* 88
no ip ospf authentication 56
no ip ospf message-digest-key 56
no ip ssh server rule <1..32> 215
no ip telnet server rule <1..32> 216
no ip virtual-server *profile_name* 85
no l2tp-over-ipsec session tunnel-id <0..65535> 114
no network 53
no packet-trace 30
no port <1..5> 57
no sa spi *spi* 106
no sa tunnel-name *map_name* 106
no scan-detection sensitivity 141
no schedule-object *object_name* 186
no server-type 204
no service-object *object_name* 181
no signature *sid* action 140
no signature *SID* action 145
no signature *sid* log 140
no signature *sid* log 145
no snmp-server rule <1..32> 219
no sslvpn policy *profile_name* 108
no tcp-decoder {tcp-xxx} log 142
no udp-decoder {truncated-header | undersize-len | oversize-len} action 142
no udp-decoder {truncated-header | undersize-len | oversize-len} log 142
no username *username* 172
nslookup 30
ntp sync 208
object-group address rename *group_name group_name* 179
object-group service rename *group_name group_name* 183
ocsp {activate|deactivate} 197
ocsp url *url* [id *name* password *password*] [deactivate] 198
out-snat source *address_name* destination *address_name* snat *address_name* 103
packet-trace 30

packet-trace [interface *interface_name*] [ip-proto {<0..255> | *protocol_name* | any}] [src-host {*ip* | *hostname* | any}] [dst-host {*ip* | *hostname* | any}] [port {<1..65535> | any}] [file] [duration <1..3600>] [extension-filter *filter_extension*] 257
peer-id type {any | ip *ip* | fqdn *domain_name* | mail *e_mail* | dn *distinguished_name*} 102
peer-ip {*ip* | *domain_name*} [*ip* | *domain_name*] 102
peer-ip *ip* 105
ping 30
ping-check {*domain_name* | *ip* | default-gateway} 55
ping-check {*domain_name* | *ip* | default-gateway} fail-tolerance <1..10> 55
ping-check {*domain_name* | *ip* | default-gateway} period <5..30> 55
ping-check {*domain_name* | *ip* | default-gateway} timeout <1..10> 55
policy {<1..5000>|append<1..5000>|insert<1..5000>} 70
policy default-route 71
policy delete <1..5000> 71
policy flush 71
policy move <1..5000> to <1..5000> 71
port status Port<1..5> 57
port-grouping ge<1..5> port <1..5> 57
psm 30
reboot 30
redistribute {static | ospf} metric <0..16> 76
release 30
release dhcp *interface-name* 54
remote-policy *address_name* 103
rename 30
rename /script/*old-file_name* /script/*new-file_name* 231
rename {/cert | /conf | /idp | /packet_trace | /script | /tmp}/*old-file_name* {/cert | /conf | /idp | /packet_trace | /script | /tmp}/*new-file_name* 231
renew 30
renew dhcp *interface-name* 54
router ospf 56
router ospf 76
router ospf 77
router ospf 77
router rip 55
router rip 76
run 30
run /script/*file_name.zysh* 231
scan-detection block-period <1..3600> 141
scan-detection sensitivity {low | medium | high} 141
schedule-object *object_name date time date time* 186
schedule-object *object_name time time* [*day*] [*day*] [*day*] [*day*] [*day*] [*day*] [*day*] . 186
server-type {file-sharing | owa | web-server} url URL [entry-point *entry_point*] . 203
server-type file-sharing *share-path folder* 204
service-object *object_name* {tcp | udp} {eq <1..65535> | range <1..65535> <1..65535>} 181
service-object *object_name* icmp *icmp_value* 182
service-object *object_name* protocol <1..255> 182
service-object rename *object_name object_name* 182
service-register checkexpire 39
service-register service-type standard license-key *key_value* 39
service-register service-type trial service {all|content-filter|idp|av} 39
session timeout {udp-connect <1..300> | udp-deliver <1..300> | icmp <1..300>} .. 253
set pfs {group1 | group2 | group5 | none} 103
set security-association lifetime seconds <180..3000000> 103
set session-key {ah <256..4095> *auth_key* | esp <256..4095> [cipher *enc_key*] authenticator *auth_key*} 105
setenv 30

setenv-startup stop-on-error off 231
show 123
show 125
show 173
show 175
show 30
show 52
show [all] 131
show aaa authentication {*group-name*|default} 193
show aaa group server ad *group-name* 190
show aaa group server ldap *group-name* 191
show aaa group server radius *group-name* 192
show account [pppoe *profile_name* | pptp *profile_name*] 201
show address-object [*object_name*] 178
show ad-server 188
show anti-virus activation 130
show anti-virus eicar activation 130
show anti-virus signatures status 134
show anti-virus statistics collect 135
show anti-virus statistics ranking {destination | source | virus-name} 135
show anti-virus statistics summary 135
show anti-virus update 134
show anti-virus update status 134
show app {general|im|p2p|stream} 125
show app all 125
show app all defaultport 125
show app all statistics 125
show app config 125
show app im support action 125
show app other config 126
show app other rule all 126
show app other rule all statistics 126
show app other rule default 126
show app other rule default statistics 126
show app other rule <1..64> 126
show app other rule <1..64> statistics 126
show app other statistics 126
show app *protocol_name* config 125
show app *protocol_name* defaultport 125
show app *protocol_name* rule all 126
show app *protocol_name* rule all statistics 126
show app *protocol_name* rule default 126
show app *protocol_name* rule default statistics 126
show app *protocol_name* rule <1..64> 125
show app *protocol_name* rule <1..64> statistics 126
show app *protocol_name* statistics 125
show app-watch-dog config 262
show app-watch-dog monitor-list 262
show arp-table 259
show bridge available member 60
show bwm activation 126
show bwm activation 71
show bwm-usage < [policy-route <1..5000>] | [interface *interface_name*] 71
show ca category {local|remote} [name *certificate_name* format {text|pem}] 198
show ca category {local|remote} name *certificate_name* certpath 198
show ca spaceusage 198
show ca validation name *name* 198
show clock date 208
show clock status 208

show clock time 208
show cnm-agent configuration 222
show conn [user *username*] [service *service-name*] [source *ip*] [destination *ip*] [begin <1..128000>] [end <1..128000>] 252
show conn status 252
show connlimit max-per-host 96
show console 209
show content-filter policy 159
show content-filter profile [*filtering_profile*] 161
show content-filter settings 159
show content-filter url-cache 159
show content-filter url-cache 161
show cpu status 33
show crypto map [*map_name*] 102
show ddns [*profile_name*] 84
show device-ha link-monitoring 170
show device-ha status 168
show device-ha sync 169
show device-ha sync status 169
show device-ha vrrp-group 168
show device-register status 39
show diag-info 255
show dial-in 221
show disk 33
show fan-speed 33
show firewall 96
show firewall status 96
show firewall *zone_object* {*zone_object*|ZyWALL} 96
show firewall *zone_object* {*zone_object*|ZyWALL} <1..5000> 96
show firewall <1..5000> 96
show force-auth policy { <1..1024> | all } 175
show fqdn 207
show groupname [*groupname*] 173
show hardware-watchdog-timer status 261
show idp 138
show idp {signature | anomaly} base profile 138
show idp {signature | system-protect} signatures {version | date | number} 152
show idp {signature | system-protect} update 152
show idp {signature | system-protect} update status 152
show idp {signature| anomaly } rules 139
show idp anomaly *profile* flood-detection [all details] 143
show idp anomaly *profile* flood-detection {tcp-flood | udp-flood | ip-flood | icmp-flood} details 143
show idp anomaly *profile* http-inspection {ascii-encoding | u-encoding | bare-byte-unicode-encoding | base36-encoding | utf-8-encoding | iis-unicode-codepoint-encoding | multi-slash-encoding | iis-backslash-evasion | self-directory-traversal | directory-traversal | apache-whitespace | non-rfc-http-delimiter | non-rfc-defined-char | oversize-request-uri-directory | oversize-chunk-encoding | webroot-directory-traversal} details 144
show idp anomaly *profile* http-inspection all details 143
show idp anomaly *profile* icmp-decoder {truncated-header | truncated-timestamp-header | truncated-address-header} details 144
show idp anomaly *profile* icmp-decoder all details 144
show idp anomaly *profile* scan-detection [all details] 143
show idp anomaly *profile* scan-detection {icmp-sweep | icmp-filtered-sweep | open-port} details 143
show idp anomaly *profile* scan-detection {ip-protocol-scan | ip-decoy-protocol-scan | ip-protocol-sweep | ip-distributed-protocol-scan | ip-filtered-protocol-scan | ip-filtered-decoy-protocol-scan | ip-filtered-distributed-protocol-scan | ip-fil-

tered-protocol-sweep} details 143
show idp anomaly *profile* scan-detection {tcp-portscan | tcp-decoy-portscan | tcp-portsweep | tcp-distributed-portscan | tcp-filtered-portscan | tcp-filtered-decoy-portscan | tcp-filtered-distributed-portscan | tcp-filtered-portsweep} details 143
show idp anomaly *profile* scan-detection {udp-portscan | udp-decoy-portscan | udp-portsweep | udp-distributed-portscan | udp-filtered-portscan | udp-filtered-decoy-portscan | 143
show idp anomaly *profile* tcp-decoder {undersize-len | undersize-offset | oversize-offset | bad-length-options | truncated-options | ttcp-detected | obsolete-options | experimental-options} details 144
show idp anomaly *profile* tcp-decoder all details 144
show idp anomaly *profile* udp-decoder {truncated-header | undersize-len | oversize-len} details 144
show idp anomaly *profile* udp-decoder all details 144
show idp *profile* signature {all | custom-signature} details 140
show idp *profile* signature *sid* details 140
show idp profiles 138
show idp search signature *my_profile* name *quoted_string* sid SID severity *severity_mask* platform *platform_mask* policytype *policytype_mask* service *service_mask* activate {any | yes | no} log {any | no | log | log-alert} action *action_mask* 146
show idp search system-protect *my_profile* name *quoted_string* sid SID severity *severity_mask* platform *platform_mask* policytype *policytype_mask* service *service_mask* activate {any | yes | no} log {any | no | log | log-alert} action *action_mask* 146
show idp signatures custom-signature all details 148
show idp signatures custom-signature *custom_sid* {details | contents | non-contents} 148
show idp signatures custom-signature number 148
show idp statistics collect 153
show idp statistics ranking {signature-name | source | destination} 153
show idp statistics summary 152
show idp system-protect all details 145
show interface {ethernet | vlan | bridge | ppp | auxiliary} status 50
show interface {*interface_name* | ethernet | vlan | bridge | ppp | virtual ethernet | virtual vlan | virtual bridge | auxiliary | all} 50
show interface summary all 50
show interface summary all status 50
show ip dhcp binding [*ip*] 54
show ip dhcp pool [*profile_name*] 51
show ip dns server cache 210
show ip dns server database 210
show ip dns server status 210
show ip ftp server status 217
show ip http server secure status 213
show ip http server status 213
show ip http-redirect [*description*] 88
show ip route [kernel | connected | static | ospf | rip | bgp] 78
show ip route-settings 73
show ip ssh server status 215
show ip telnet server status 216
show ip virtual-server [*profile_name*] 85
show isakmp keepalive 101
show isakmp policy [*policy_name*] 101
show isakmp sa 106
show l2tp-over-ipsec 114
show l2tp-over-ipsec session 114
show language {setting | all} 223
show ldap-server 188

show lockout-users 175
show logging debug entries [priority *pri]* [category *module_name*] [srcip *ip*] [dstip *ip*] [service *service_name*] [begin <1..512> end <1..512>] [keyword *keyword*] ... 247
show logging debug entries field *field* [begin <1..1024> end <1..1024>] 247
show logging debug status 247
show logging entries [priority PRI] [category *module_name*] [srcip IP] [dstip IP] [service *service_name]* [begin <1..512> end <1..512>] [keyword *keyword*] 245
show logging entries field *field* [begin <1..512> end <1..512>] 245
show logging status console 249
show logging status mail 247
show logging status syslog 247
show logging status system-log 246
show mac 33
show mem status 33
show network-extension local-ip 108
show ntp server 208
show object-group address [*group_name*] 178
show object-group service *group_name* 182
show ospf area IP virtual-link 77
show ping-check [*interface_name*] 54
show policy-route [1..5000] 71
show port setting 57
show port status 57
show port vlanid 59
show port-grouping 57
show radius-server 189
show ram-size 33
show report [*interface_name* {ip | service | url}] 251
show report status 251
show rip {global | interface {all | *interface_name*}} 56
show running-config 231
show sa monitor [{begin <1..000>} | {end <1..000>} | {rsort *sort_order*} | {crypto-map *regexp*} | {policy *regexp*} | {sort *sort_order*} 106
show schedule-object 186
show serial-number 33
show service-object [*object_name*] 181
show service-register status {all|content-filter|idp|sslvpn|av} 39
show session timeout {icmp | tcp-timewait | udp} 253
show setenv-startup 231
show snmp status 219
show socket listen 33
show socket open 33
show software-watchdog-timer log 262
show software-watchdog-timer status 262
show sslvpn application [*application_object*] 203
show sslvpn monitor 108
show sslvpn policy [*profile_name*] 108
show system uptime 33
show username [*username*] 172
show users {*username* | all | current} 175
show users default-setting 173
show users idle-detection-settings 174
show users retry-settings 173
show users simultaneous-logon-settings 174
show users update-lease-settings 174
show version 33
show vpn-concentrator [*profile_name*] 105
show vpn-counters 106
show workspace application 109

show workspace cifs 109
show zone [*profile_name*] 80
shutdown 30
signature *sid* action {drop | reject-sender | reject-receiver | reject-both} 140
signature *sid* action {drop | reject-sender | reject-receiver | reject-both} 145
signature *sid* log [alert] 140
signature *sid* log [alert] 145
snmp-server rule {<1..32>|append|insert <1..32>} access-group {ALL|*address_object*} zone {ALL|*zone_object*} action {accept|deny} 219
snmp-server rule move <1..32> to <1..32> 219
sslvpn network-extension local-ip *ip* 108
sslvpn no connection username *user_name* 108
sslvpn policy {*profile_name* | *profile_name* append | *profile_name* insert <1..16>} 108
sslvpn policy move <1..16> to <1..16> 108
sslvpn policy rename *profile_name profile_name* 108
tcp-decoder {tcp-xxx} log [alert] 142
traceroute 30
traceroute {*ip* | *hostname*} 257
traceroute {*ip* | *hostname*} 257
traffic-prioritize {tcp-ack|content-filter|dns|ipsec-vpn|ssl-vpn} bandwidth <0..1048576> priority <1..7> [maximize-bandwidth-usage]; 51
traffic-prioritize {tcp-ack|content-filter|dns|ipsec-vpn|ssl-vpn} deactivate 51
transform-set {ah-md5 | ah-sha} [{ah-md5 | ah-sha} [{ah-md5 | ah-sha}]] 103
transform-set *esp_crypto_algo* [*esp_crypto_algo* [*esp_crypto_algo*]] 103
transform-set isakmp-algo [isakmp_algo [isakmp_algo]] 101
trigger append incoming *service_name* trigger *service_name* 70
trigger delete <1..8> 71
trigger insert <1..8> incoming *service_name* trigger *service_name* 71
trigger move <1..8> to <1..8> 71
udp-decoder {truncated-header | undersize-len | oversize-len} action {drop | reject-sender | reject-receiver | reject-both} 142
udp-decoder {truncated-header | undersize-len | oversize-len} log [alert] 142
udp-filtered-distributed-portscan | udp-filtered-portsweep} details 143
unlock lockout-users *ip* | console 175
username rename *username username* 172
username *username* [no] description *description* 172
username *username* [no] logon-lease-time <0..1440> 172
username *username* [no] logon-re-auth-time <0..1440> 172
username *username* nopassword user-type {admin | guest | limited-admin | user} ... 172
username *username* password *password* user-type {admin | guest | limited-admin | user} 172
username *username* user-type ext-user 172
users default-setting [no] logon-lease-time <0..1440> 173
users default-setting [no] logon-re-auth-time <0..1440> 173
users default-setting [no] user-type {guest | limited-admin | user} 173
users force-logout *ip* | *username* 175
vpn-concentrator rename *profile_name profile_name* 106
write 231
write 30
zone *profile_name* 80